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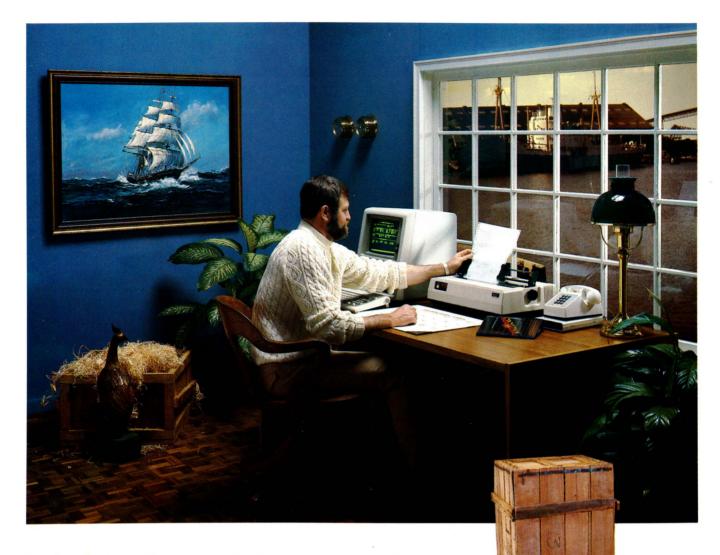
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(For More Information Circle 66)





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PERSONAL COMPUTING

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Low-Cost Accounting

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PERFORMANCE

Buying Smarter60

The right strategies can go a long way toward helping you sidestep the many perils you are sure to encounter when purchasing personal computers and peripherals. Here are some to consider.

PERFORMANCE

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PERFORMANCE

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Hitching your word processor to a laser printer can make your documents look typeset. Here is what you can expect from some of the leading programs.

PRODUCTIVITY

Phone Directory Setups101

RAM-resident telephone dialers can take the tedium out and put the productivity into your daily phone calls. Here's some tips on marrying your telephone to your personal computer and the best ways to get the telephone numbers into an electronic directory.

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An emerging generation of powerful but low-cost software is now making affordable accounting solutions available to virtually every size business. Savvy users of this new breed of program are going beyond bookkeeping, to take hard analytical looks at their company's performance.

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John Sculley 145

The president and recently named board chairman talks about radical philosophical shifts at Apple Computer, Inc. Can Apple survive in the business world dominated by the IBM personal computing standard? Sculley maintains it will not only survive, but flourish.

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COVER: Photograph by Mark
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Associates, Dallas, Texas, of
Mark Wilson, a Dallas
entrepreneur who ran DAC Easy
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PC for his start-up company's
bookkeeping.

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EDITOR'S NOTE

Apple In An IBM World

he IBM personal computing standard has become so widely accepted that it now totally dominates business computing. Even IBM can't change that, since so many business people have shelled out thousands of dollars for systems that are, in one way, shape or form, compatible with each other.

Now, even Apple Computer, Inc.,—where the concept of one computer, one individual, was born—has decided that to succeed in the American office, the company must change direction. Apple has concluded that to be any kind of factor in business computing, the company must recognize that personal computing is currently an IBM-compatible world and that Apple must play by those rules.

In an interview with *Personal Computing* magazine, Apple president and chairman John Sculley says that if a person really wants MS-DOS compatibility, there ought to be a way to get it through an Apple "workstation." He acknowledges that this thinking is a radical philosophical departure for the company. And we see that as highlighting just how entrenched the standard begun by IBM has become. This is not to say Apple is going to produce an MS-DOS computer and put an Apple label on it, but rather that IBM files will be usable from a Macintosh.

Also new for Apple is Sculley's directive to maintain a line of products—unlike the times when the Lisa was discontinued or the Apple III was abandoned, leaving owners of those computers, if nothing else, at least slightly miffed. Whatever the changes may be at Apple, and Sculley has left the door open to many new possibilities, the company will remain firmly committed to both the Apple II and the Macintosh line, Sculley proclaims.

Executive Editor Sandra Reed, who watches Apple closely from our San Jose office, observed: "Dressed in a casual sweater and slacks, Sculley was reminiscent of the informality that we commonly associate with Apple. But he is of a different breed than Steve Jobs. Sculley is calculating, and his remarks were unemotional."

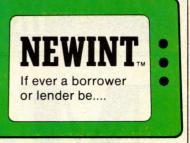
Many argue that the company's new course of compromise was the only one Apple could take, that Apple would have been doomed if it continued on its own independent path. Although later than others, Apple is not alone in accepting the business standard of computing. Many companies, such as Tandy, Hewlett-Packard, ITT, Texas Instruments and Kaypro to name a few, tried to go it alone, producing non-IBM-compatible computers. All those efforts failed. Those companies learned from those mistakes, and have since conformed to the standard.

Of course, Compaq plugged into the IBM standard differently, deciding to be "totally compatible" from day one. That company was successful from the start and is now the best-known and most successful of the compatible makers for business. (Compaq has just introduced a new "286" computer. See the review section.)

What is the significance of Apple announcing that it is taking its first steps toward IBM compatibility? Only time will tell if this is the right way to go for Apple. Although it may be the only way to go.

Charles of Martin

CHARLES L. MARTIN, EDITOR-IN-CHIEF



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In addition to automatic answering, both modems offer Adaptive Dialing—which means that if you don't specify either tone or pulse dialing, the modems try tone dialing for one digit, and if that doesn't work,

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Both modems will automatically re-dial a number as many times as you tell them to. Or if you prefer, they can switch to an alternate number on a busy signal or a no answer. Once a connection is made, the modems automatically detect and adjust to the incoming transmission speed. They can also initiate an automatic log-on sequence including control characters, ID number and password.

And both modems have extensive "Help" menus a complete complement of built-in diagnostics, a programmable speaker, and two phone jacks on the back so both your phone and the modem can be connected to the same line at the same time. You can even switch between voice and data without interrupting the phone call.

A Modem with a Memory of Its Own

The IBM 5841 stand-alone modem has some additional features you don't usually find on 1,200 bps modems. For example, the modem is switchable between asynchronous and synchronous modes and has a 20-entry Dialing Directory. Kept in non-volatile

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storage, the directory enables the modem to dial up and log on to systems automatically. This feature is most convenient when the 5841 is used with a fixed-function ASCII terminal such as the IBM 3161 or 3163.

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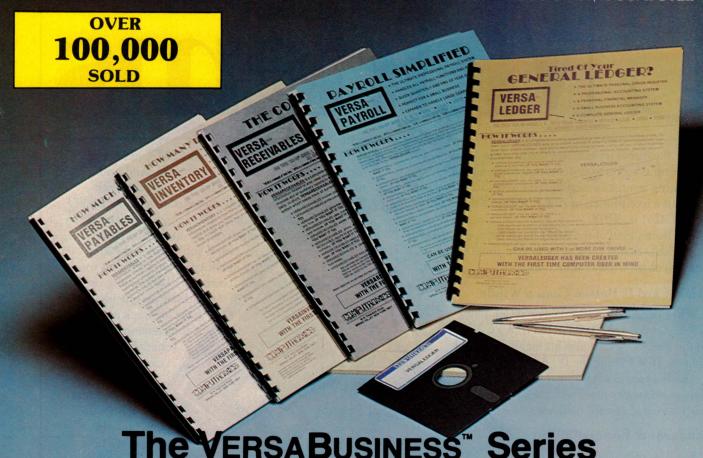
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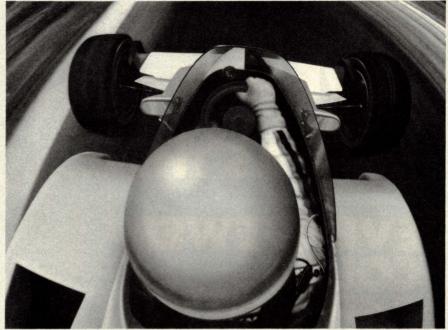
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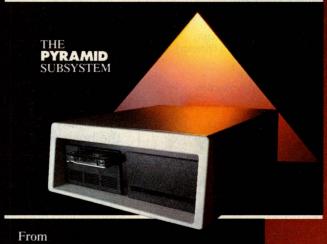


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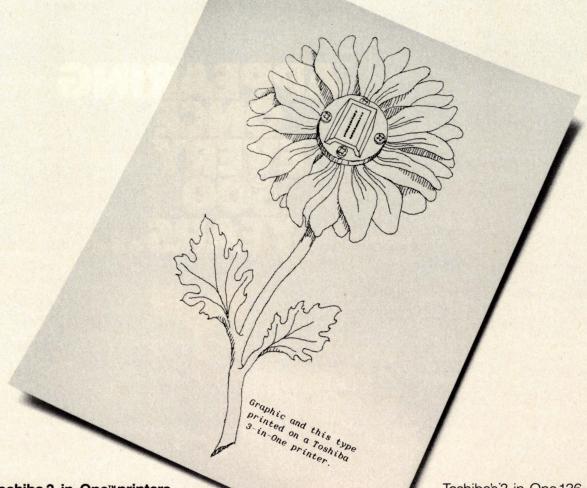


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Thank you Ms. Liskin. Your article was a tremendous help!

Andrew L. McDonough Old Tappan, NJ

The article on "How Computers Communicate" (TIPS, January) was excellent. I plan to refer students (at the university where I work) to it when they ask: "How do I use my Apple IIe on the Vax with the EDT editor?" However, the ending was a severe disappointment; I feel it was edited "by the inch"—when no more would fit, the rest was thrown away. What was lacking was a summary paragraph that would say something like:

In theory, any piece of computer equipment can communicate with any other piece of computer equipment. In practice, however, the difficulty depends on what you want to do, and what hardware and software you plan to use. Be prepared to devote time and effort to making the connection—considerable time and effort if you want to do more than send mail, work bulletin boards or transfer files. It may not be practical to use your computer with a dissimilar mainframe full-screen editor. Unless the file is very large, transfer it to your computer; edit it there (thus saving money on the mainframe and phone bill); then transfer it back to the mainframe computer.

Mike Ramey Seattle, WA

ELECTRONIC BANKING

eader Michael Randall has some grim things to say about home banking via personal computer (LETTERS, February). I agree with his first point, that the date of debit from your bank ac-

count will not be the date on which the payee receives the payment. The time for the bank's draft to reach the payee via mail must be included in your plans.

In regard to other issues, however, it seems that he has not had a good experience with one or another program. I use two of the New York bank programs. I find one (Direct Access from Citibank) superb and the other reasonable. I reviewed two other bank programs (by asking the banks for demo disks, which they supplied) and found them somewhat primitive.

With the Direct Access program, you can pre-program transfers between accounts, make recurring or periodic payments, and pay large and small vendors as well as individuals. The bank supplies a toll free phone number (which Chase's Spectrum does also), and the monthly \$10 fee is easily offset by a combination of convenience and postage savings. A recent innovation of Direct Access is that you can download data to a program such as Lotus 1-2-3 and then manipulate it as you choose,

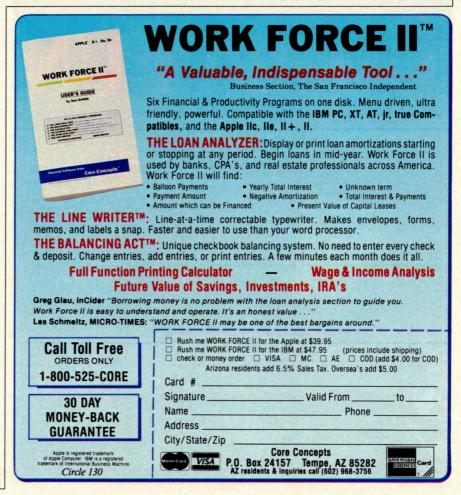
using the bank's template or your own. The Dow Jones service is available to Direct Access users at significant discount, and you are treated as a first rate customer by DJN/R.

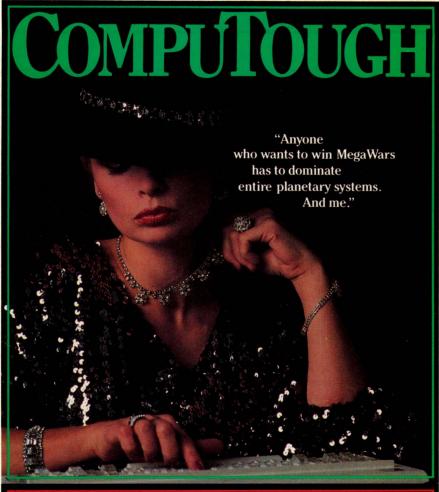
I do agree with Mr. Randall that the checkbook is easier to carry around than the personal computer. The cables and wires from the personal computer tend to trip one getting on and off the bus

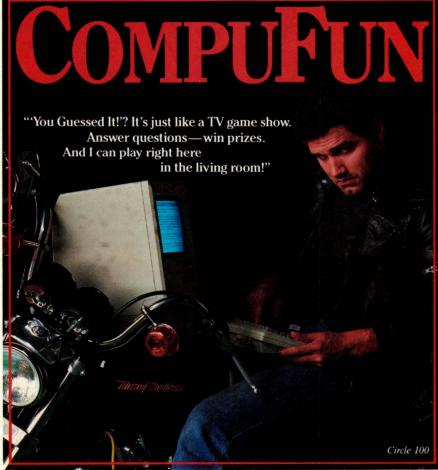
Robert W. Guiry Jamaica Estates, NY

A MODIFIED SHORTCUT

Congratulations on the excellent "Shortcuts!" article (PRODUCTIVITY, December). I only wish to suggest a small modification of the recommendations regarding DOS. It was recommended that in order to shorten the search time of a disk drive's read/write head with disks crammed with data (and again in the preparation of a rebootable disk), a more efficient new copy should be generated using the copy *.* instruction. I agree with this recom-







LETTERS

mendation, but I strongly suggest that the COPY/V*.* version be used, instead. It takes a bit longer to execute, but since the new version of the disk cannot be verified against the original disk using the DISKCOMP routine on completion of the duplicating process, it is imperative that we verify the accuracy of the file transfer during the process. The COPY/V *.* instruction accomplishes exactly that.

Andrew Berczi Waterloo, Ont.

Editor: You are correct. The copy/v *.* command goes our suggested copy *.* one better by verifying that all of the files have been copied to the target disk accurately.

Some other facts are also worth noting, however: Verifying files as they are copied lengthens the copying time by about one third; in fact, inaccuracies in file transfers of this type are very rare; and the VERIFY command can perform the same function after the fact if you merely wish to verify the accuracy of one or two files in a group. (COPY/V verifies as it copies.)

QUICK PRESENTATIONS

The article on quick presentations (CORPORATE BUSINESS, December) gives quick and incomplete coverage to graphic options available on the Macintosh. The Macintosh offers a simple and comparatively low-cost, yet extremely flexible, alternative to MS-DOS software and hardware. At my office, we regularly employ both data and schematic graphics, and we have found products like MacDraw, Chart and Excel to be excellent tools for preparing visuals. We routinely use a Macintosh to create transparencies and training manuals, as well as standard reports and manuscripts. Users compliment us on the graphics and also tell us that they wish their MS-DOS compatible software and printers produced the quality images we get from our dot matrix Apple Imagewriter, let alone from the Apple LaserWriter. My friends and colleagues who have IBM, Compaq and DEC personal computers lament the graphic limitations of their systems.

As for projection options, the article fails to cite the "slide show" feature in Living Videotext's ThinkTank 512. I've used Chart and MacPaint to create presentation graphic files that I move into ThinkTank. By hooking up a projection system, I can use the Macintosh mouse like the hand control on a standard

35mm slide projector, moving forward and backward in a presentation that might include data, text and schematic images. I could even include digitized images created with Thunderscan software. Moreover, clever users can even create animation-like movement under ThinkTank's slide show: Images can change as quickly as every 60th of a second.

Kenneth C. Green Los Angeles, CA

MORE ON "EASIER COMPUTING"

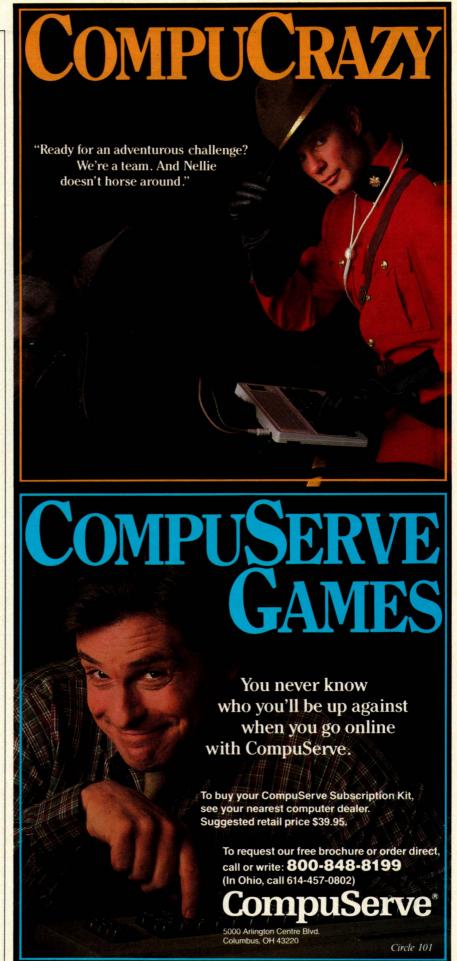
Y ou hit the nail on the head with your article (ESSAY, January). Computer stores are zilch; manuals are Greek; calling software producers only gets a condescending answer that doesn't help at all. Attitudes about users must change if the industry wishes to grow.

Joan Brainard St. Paul, MN

Y ou're right. Computing isn't easy! But I never expected to read that in *Personal Computing*—at least not in the direct manner in which it was presented in your January essay. I vote to make "Why Not Make Computing Easier?" the article of the year for 1986. It was long overdue.

My computer is a Sanyo 775, and my printer is a Star SG-10. I did a great deal of research before making my purchases about seven months ago, and if I had to do it over, I would buy the same equipment again. It is unfortunate for potential buyers that very little has been written in computer magazines about these superb machines. However, I am facing some problems that I have blamed on myself for my inability to understand the manuals. In seven months, I have not been able to produce a document with elite characters. There is not a special DIP switch for that, and I can't figure out a way to solve the problem.

That's my small problem. Software is my big problem. Three IUS programs were packaged with my computer, but I have run into problems with all of them before getting through the tutorials. For example, the Easy Writer II program is supposed to provide a way to create a template letter that uses various items of information from a "names list" so letters can be personalized with differing information to various people. I have not been able to get the one in the tutorial to work, so I have never tried to do such a letter in a "real life" situation. Why waste more hours? I've also creat-



LETTERS

ed a "label template," but instead of getting names and addresses printed out, all I get is the code printed out. And the manual is full of errors. It may instruct the user to hit a Ctrl-PF-5 when one really needs to hit Alt-PF-5. I stumbled onto these fixes, but I really don't have time to experiment. I love Easy Writer II for what I am able to do with it, and

would much rather use it than the more popular WordStar program that we use in our office, but I'll never buy a software program from IUS unless something happens to change the negative feelings I have at this point.

My job requires lots of public speaking, and that requires lots of outlining, so I bought a program called MaxThink

about a month ago. I could type a lot of outlines on my trusty typewriter in the amount of time I have spent trying to get MaxThink to do what I want done. It wants to do it the MaxThink way. I want to do it my way, only much faster than I've been accomplishing in the past! I want to be able to print a title with more than 20 characters in it if that is my pleasure. I want to print an introduction directly under the title without the outliner calling it "point I." I want subheading A to be indented instead of lining up directly under Roman numeral I. The numbers indent, so why won't A, B and C, etc.?

Enough from me. Thanks for a great article!

James D. Wilkins Grand Island, NE

Pravo. Your article struck a chord in me with words I wish I could say.

DIP switches are ridiculous. Cables are more ridiculous. Data bits, stop bits, parity, baud rate, my God, I don't have to open the hood of my car and adjust the mixture of the carburetor every time I want to drive.

Michael Kohan Los Angeles, CA

The real problem behind personal computing is not that the wrong people make the decisions at computer companies. It's the lack of computer literacy on the part of most users. I don't agree that the computer industry is insensitive to users' problems. Most dialog takes place between a novice user and software support personnel. Support personnel spend most of their time answering questions like, "What does 'error 01' mean?" If users would just bother to read the manual, they would learn a lot.

I feel the biggest problem with computer use is that most users are in the "forever novice" category: someone who uses a computer because he has to, not because he wants to. One can probably relate this attitude to a lack of initiative on the part of too many people in America. Too many people are willing to do just what they have to.

The typical novice user who will progress to a knowledgeable user is one who is inquisitive, self-motivated and a logical thinker. He or she may not have a college degree, but made the most out of high school. They are the ones who took and enjoyed algebra, trigonometry, biology, chemistry and physics because they like to be challenged mental-



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ly and find the answers to questions that start with "Why?" and "How?"

If someone wants to truly learn how to use a computer as a multipurpose tool, it is going to take some work on his or her part. Unfortunately, many people aren't willing to put forth the effort required to gain this knowledge. For these people, if it takes more than a few minutes of mental effort on their part, it's too much trouble.

Donald L. Dennison Grafton, VA

our essay could have been lifted verbatim from many letters I have written on precisely this matter—all to no avail. I began computing in 1978 when I bought a prototype TRS-80 Model I (oh, the follies of youth!) and had a software outfit prepare a set of programs for my business. It took a year of debugging to turn the monster from a liability into an asset.

Over the years I acquired a couple of Osbornes, and in my everlasting quest for "user-friendly" software, I bought thousands of dollars of programs promising rosy things. One or two indeed delivered. But I am using a manual typewriter for this letter. It is simpler and faster.

Giv Cornfield Malibu, CA

hen purchasing a rather expensive unit, I don't expect to be treated like the King of Siam. But I do expect that the retailer should either be a lay computer expert himself or have the sense to hire one who is. What I accomplished on my own to get my system up and running, having no technical experience whatsoever, required only common sense and the ability to read instructions and ask intelligent questions. Those attributes seem to be sorely lacking in the computer world.

Do these people live in a different time and place? I don't want to know about DIP switches, jumper positions, ports, etc. All I beg for (and I mean beg) is the simple ability to put something in the box, get it out the way I want it and get my work done in a reasonable length of time.

Douglas Trenner Coachella, CA

was the only one having terminal trauma on a daily basis.

I work for a school district, and requested an IBM PC as my personal

computer. What I got was a Zeus (low bid), which is termed "IBM-compatible." It came with 256k and a Princeton HX12 color graphics monitor. Since my line of work is public information, the computer was to speed up the efficiency in the office. We not only bought one Zeus, but two—one for my secretary. Also at that time (1984) we began to use the word processing program WordStar, so that we would be compatible with others in the building.

Two years down the road, we have only scratched the surface of increasing office productivity. Those selling the Zeus offered no technical assistance on how to set up the office in the most functional manner.

We had hoped to hook up three PCs to a letter-quality printer at a reasonable cost, but no one has been able to accomplish that because of component incompatibilities.

The good news is that I did buy a Hayes Smartcom 1200B modem and software so I could access The Source and EdLine (for school public relations communicators). The bad news is I couldn't find anyone to tell me how to get the software to work with the hardware. Thank God we have a highly skilled computer technician working in our building. He's served as a technical advisor to me on his coffee breaks for the past year and a half.

To try to assist with the workload, I bought an IBM PC-compatible, an ITT Xtra, for my home. This 256k unit has a monochrome monitor. Of course, the salesperson didn't explain to me that I would regret it if it didn't have graphics capability. I experienced great frustration when I tried in vain to use Printmaster.

As for WordStar, it's great—but if you have to take your disk to someone else's printer, you have to know the printer's parameters, otherwise the margins and the length of the page won't jive!

I am most pleased with the performance of the ITT Xtra, but am now having difficulty trying to figure out a way to upgrade to a graphics setup without spending another \$500. So far, the salesman has offered little assistance.

Kay Engelsen Tacoma, WA

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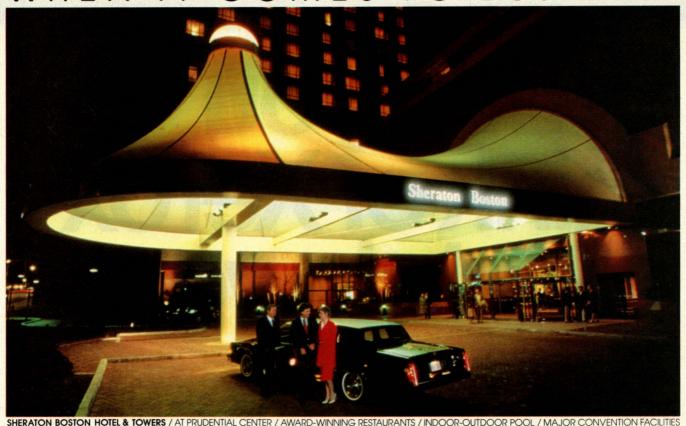
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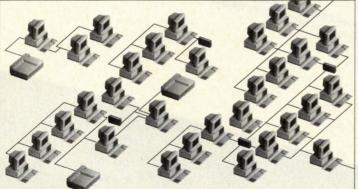
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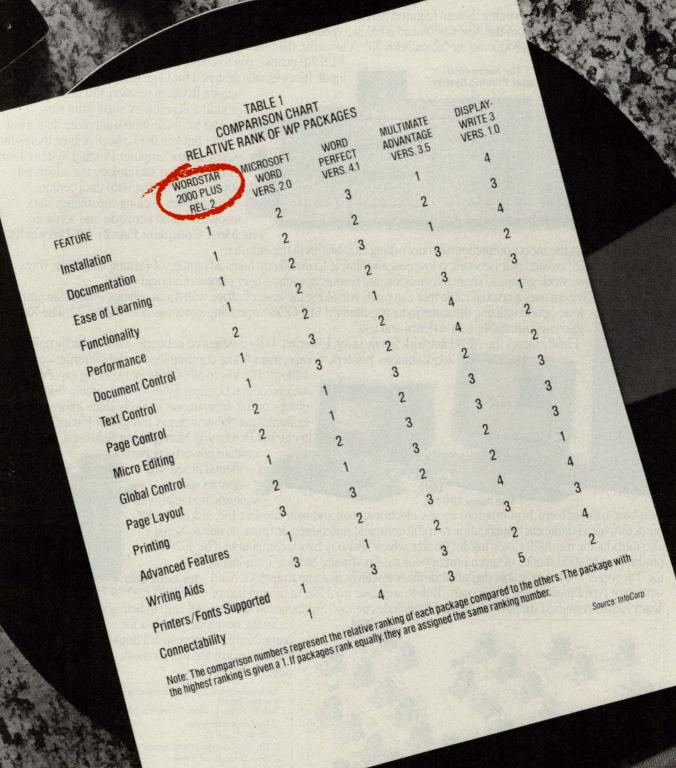
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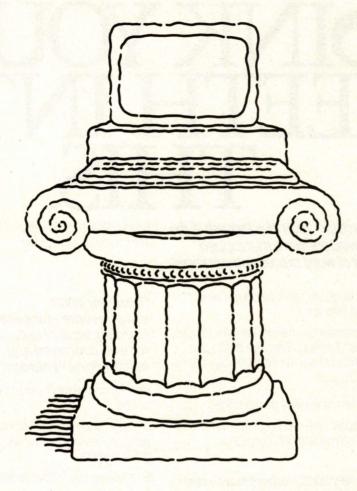
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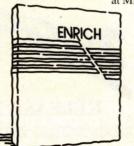
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(For More Information Circle 81)

Compact Disk Technology

The Once And Future CD-ROM

■ Compact disks promise the same breakthrough advantages to personal computer users as they currently deliver to stereo buffs. As an optical (laser beam readable) data storage medium, a compact disk read-only

memory (CD-ROM) offers significant data storage capacity compared to the pedestrian floppy—nearly 600 megabytes versus 360 kilobytes. That is roughly 1,500 times as much, or roughly a quarter of a million text pages. The long term potential of CD-ROM applications is the ability of personal computer users to quickly and inexpensively retrieve information from voluminous broad or special interest data bases.

So how come the only general interest CD-ROM program currently available for personal computers is the Electronic Encyclopedia, a version of the 20-volume *Academic American Encyclopedia* from Grolier, Inc., of Danbury, Connecticut? It's a matter of standards. Particularly, the lack thereof. For the system software necessary to run CD-ROM programs, issues of file structure, file pointers, number of sectors per track and so on have yet to be resolved.

Les Cowan of Rothchild Consultants in San Francisco notes that three groups are currently working on the problem. One, the High Sierra Group (named after their first meeting site in Nevada), comprises representatives from Digital Equipment, Microsoft, Reference Technology, Activenture and Hitachi, among others. The other two groups, the Information Industries Association and the American National Standards Institute, are taking a less active role, waiting for the outcome of the High Sierra Group's deliberations. In March, Microsoft Corp. organized the first International Conference on CD-ROM in Seattle, Wash., where key players from the personal computer, information, publishing and fledgling CD-ROM industries exchanged views on standards, potential applications and marketing scenarios.

Until a software standard is set, "It's the chicken and egg problem," says Scott McCready, a consultant with the Boston-based Yankee Group. "Hardware manufacturers don't want to make units without software available, and software manufacturers don't want to go to market without an installed base of drives." McCready estimates that a standard, and its consequent software availability, is still 18 months off.

DRI Chairman Gary A. Kildall, who, as president and founder of Activenture was instrumental in the Grolier Electronic Encyclopedia's development, is more optimistic about the time it will take CD-ROM to gain a critical mass of acceptance. "We need 10 good titles to knock people out," he says. Kildall thinks that could happen before the year is out.

Computer-peripheral CDs use familiar technology to store data. Like the magnetic medium floppy disk, a data-storing CD-ROM is encoded with a series of on and off bits. The bit status is encoded onto the CD-ROM in such a way that the precise beam of a laser can read it, similar to the way music is read from the kissing-cousin stereo CD. For instance, in CD-ROMs, pits of varying depth on the disk's aluminum surface

represent the bits. A pit at one depth indicates an on bit, a pit at another depth indicates an off, or reset bit. The ability to rapidly stamp out, rather than record, CD-ROMs represents a mass-production revolution in the field of data storage.

Beyond this emerging generation of CD-ROMs loom even more sophisticated laser-based data disk technologies. One is called WORM—write once/read many times, which has archival applications. Another is an EPROM—erasable/programmable—laser disk, which will work much like floppies do now, with virtually limitless data reading, writing and rewriting capability.

These classes of CD use a substrate (the material on which information is encoded) different from the aluminum base used for CD-ROMs. Dve-in-polymer disks, currently applicable to write-once disks only, use a dye in the substrate to irreversibly signal an on or off bit. The laser burns the dye off of a spot to set a bit. An area with the dye intact represents a reset bit. Thermo-magneto-optic disks use a polymorphous substrate thick with magnetic particles. The laser selectively strikes the substrate and a magnetic field applied to that area changes the orientation of the magnetic particles to denote an on or off bit. This is a totally reversible process, thus the programmability. Another programmable approach is phasechanging recording, where an optically sensitive substrate exists in one of two states, amorphous or crystalline. In this case, the laser affects the physical state of the medium, denoting the bit status. An amorphous dot indicates a set bit, a crystalline area a reset bit.

Manufacturers including IBM, Sony, Hitachi, Asahi Chemical and Matsushita are licensees of a phase-changing technology pioneered by Energy Conversion Devices, Inc., of Troy, Michigan. This so-called Ovonic read and write technology is the basis of an archiving memory unit Matsushita currently markets for use in conjunction with a video camera. But the optical phase-changing technology's greatest potential is as a future replacement for floppies and hard disks. Technology analyst Rolf Houkom of Derby Securities, in New York City, notes that the ECD technology is inherently compatible with the emerging CD-ROM technology. "Technical data indicates it is also reliable enough to be developed right now," he adds. It is likely and logical that in the future, optical disk players will be able to handle both read-only as well as read-and-write disks of the phase-change variety.

Lap-Top Gets A Hard Disk

The Datavue 25, from Quadram, of Norcross, Ga., already one of the most intelligently designed and functional IBM-compatible lap-top com-

puters, will soon be sporting some extra muscle in the form of a built-in 20Mb hard disk drive. The upgraded Datavue 25, at a mere 14 pounds, will also offer the option of on-board single or twin 3.5-inch drives. Quadram officials are also crowing about the new portable's use of a fluorescent-bulb, backlit LCD screen that offers longer display life. The new machines will be priced between \$2,000 and \$3,000.

PERSONAL COMPUTING/APRIL 1986 25

UPDATE

Windows Support

Living Videotext, Inc., of Bellevue, Wash., the maker of Think-Tank, an outlining program, and Ready, a RAM-resident outline utili-

ty, will be developing software to support Microsoft's Windows operating environment. The company's announcement closely followed a statement of similar intention by Lotus Development Corp., of Cambridge, Massachusetts.

Random Protection

■ Have you heard about the Russian Roulette approach to copy protection? It's actually quite refreshing: The latest version (2.0) of Managing

Your Money, from MECA, Westport, Conn., can be copied onto everyday-use floppies or hard disks and run thereafter with impunity—almost. Here's the catch: At some randomly selected time, the program will require the user to insert the original "ignition" diskette of the three-floppy program. For bona fide owners, this is no sweat. For unauthorized users, well, its kind of like "gotcha." No data is destroyed, but the program freezes dead in its tracks. (You can take a peek at the message that would result by hitting the M key from the main menu.) Unauthorized users then face the option of abandoning use of MYM, purchasing (with no questions asked, we have been assured) an authorized copy of the program for \$200—or trying to find their generous buddy whose original diskettes were copied.

"It's neat, fun and fair," claims MECA marketing chief John Hawkins. Early versions of MYM required the constant use of a key diskette upon starting, and that brought complaints from hard disk users, Hawkins notes. The current copy protection scheme strikes a compromise between a user's convenience and the manufacturer's interest. MECA president Jerry Rubin claims credit for this random copy protection scheme, but hopes it will be mimicked throughout the software community. The copy protection scheme is not copy—that is, patent—protected.

Xerox's LAN Entries

■ Xerox Corp. recently introduced a low-cost, MS-DOS compatible baseband local area network, the Xerox Communications 22 (XC-22),

that uses standard telephone wire for reduced installation costs. The 1Mb-per-second network accommodates up to 10 workstations (\$720 each) at a maximum distance of 400 feet and can handle larger networks with an optional extension unit. It supports all software running under DOS 3.1, making the system software compatible with IBM's Token Ring and PC networks.

Remember VisiOn?

■ The integrated package that was going to put windows on the IBM PC way back in 1982 is resurfacing as a double-duty front-end to a main-

frame computer. VisiOn was seriously flawed when it first came to market. Before its developer, VisiCorp went out of business the VisiOn technology was sold to Control Data Corp., of Minneapolis, Minnesota. Now, CDC is making the VisiOn program available to time-sharing users of its Business Information Services, a decision support system. VisiOn acts as an easy-to-use front end to CDC's mainframe information. Looking much like the original without the bugs, VisiOn will be available this month at a price ranging from \$300 to \$900, depending upon the applications included.

Hardware Update . . .

■ Kaypro, of Solana Beach, Calif., has introduced several peripherals for the Kaypro 2000, including a 1200-baud internal modem (\$295), a

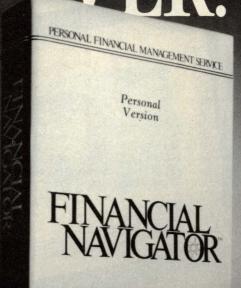
serial-to-parallel interface (\$65) that enables parallel printers to be connected to the 2000's serial port, and a null modem cable (\$50) that connects the 2000 to an IBM PC or Kaypro 16, to facilitate data transfer . . . The Mockingboard, an addon board from Sweet Micro Systems in Cranston, R.I., that provides stereo sound and speech capabilities for the Apple II series can now reside in any slot of the II Plus or IIe and can use the computer's own speaker. In addition, Bank Street Music Writer from Mindscape, Inc. in Northbrook, Ill., and a series of releases from MasterSoft designed for the trumpet, clarinet, flute, saxophone and voice now work with the Mockingboard . . . Iomega Corp. of Roy, Utah, has introduced new Bernoulli Boxes for the Macintosh Plus available with 5-(\$1795), 10- (\$2495) and 20Mb (\$3095) single drives, dual 10Mb (\$3495) and dual 20Mb drives (\$4495) . . . Sysgen, Inc., of Fremont, Calif., has increased the storage capacity of the Smart Image tape backup unit from 10Mb to 20Mb. Sysgen has also lowered the price by \$100 to \$895 for external units and \$795 for internal units ... Irwin Magnetics, of Ann Arbor, Mich., has introduced new software that is designed to handle disk space more efficiently and speed the operation of its Backup series of tape backup units ... The Okimate 20 from Okidata in Mt. Laurel, N.J., now has a \$100 Plug N' Print kit for connection to Commodore's Amiga.

... Software Update

Manhattan Graphics in New York City has announced version 2.1 of its desktop publishing software Readysetgo for the new Macintosh

Plus. It retails for \$195... Multiplan, version 1.1 from Microsoft Corp. Bellevue, Wash., is now available for the Apple Macintosh and features improved printing options, new financial functions, variable font and font sizes, and the addition of a second spreadsheet window. Current owners of versions 1.0 through 1.02 can update for \$25... Cottage Industries, Inc., Liberty, Mo., has announced two new releases of their Menu System, which is designed to simplify the operation of a hard disk computer by offering an unlimited number of nested menus. Version 3.0 features interactive input—the ability to copy files and execute replaceable parameter DOS commands without exiting. Users can upgrade for \$10. Version 4, a multiuser release, is available in 4, 8, 16, 32, 64, 128, 256, 512 and 1024 user formats. Prices range from \$160 to \$2,100 . . . Compustock, an investment analysis program from A.S. Gibson & Sons, Inc., Bountiful, Utah, now includes the ability to store and recall stock data files from user defined directories as well as standard directories; graphic displays; and increased stock highlighting criteria that can be used in conjunction with the stock data base subscription service. Updated versions are available for \$35 ... The Software Group, Ballston Lake, N.Y., has developed Enable/Check, a separately packaged spelling checker designed to work with the Enable integrated package. The company will send free copies to users who subscribe to the manufacturer's annual support plan. The program is available directly from the company for \$34.95... Q&A, the \$300 integrated data base management/word processing system, from Symantec Corp., Cupertino, Calif., now includes a spelling checker that will be sent free of charge to currently registered owners of Q&A.

GUARANTEE FOR 3



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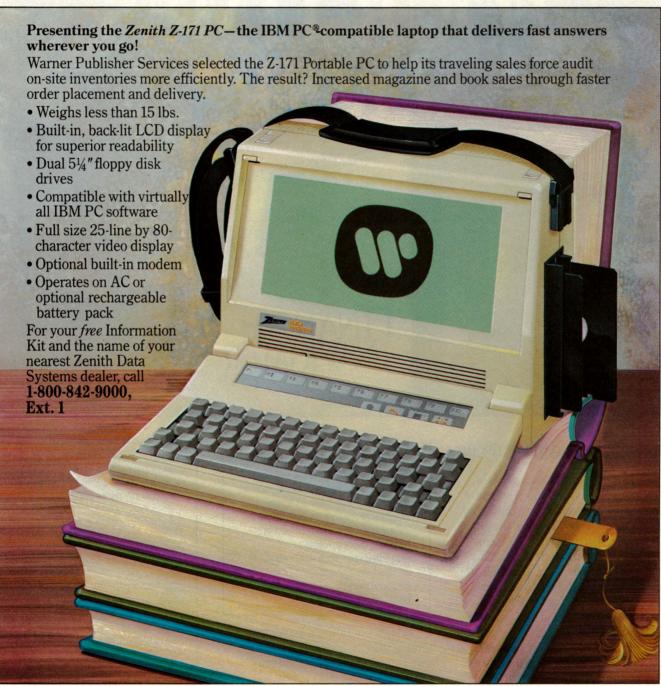
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7IP Mail to Financial Navigator, P.O. Box 306, 125 Main St., Half Moon Bay, CA 94019 Or call 1-800 227-6703 (inside Calif. call 1-800 632-7979) to order using Mastercard, Visa, or American Express.

253 Martens Ave., Mountain View, CA 94040. (415) 962-0333 The Financial Navigator requires 192K of RAM, and DOS 2.0 or higher. *Calif. residents please add local sales tax.

(For More Information Circle 65)

When Warner demanded a portable PC that travels light and thinks big, Zenith delivered.





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ATHY HILL

Computing's Business Age



by Richard A. Shaffer

onsider the button. As simple and as elegant as some of man's most basic tools-the wheel, the lever, the inclined plane-the button was invented in the 13th century, but did not become common for four hundred years. Aviation did not become commercially important until two decades after the Wright brothers' flight at Kitty Hawk. At the end of television's first 10 years, only six million sets had been sold in the United States. A new technology may be discovered in a picosecond of insight, but its adoption is usually slow.

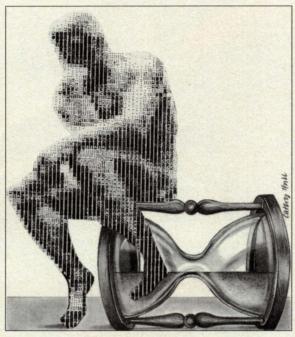
Gradually, executives in personal computing are becoming more aware of the moderate pace at which most technologies diffuse through a culture, and they are beginning to regard the present rate of computer sales as normal. The

buying rush of the early 1980s is starting to appear as an aberration, not a goal that can be achieved again. That new attitude on the part of executives is called maturity, which is appropriate in a maturing market.

As personal computing grows older, the surviving companies are beginning to ask how they can mesh with the rest of the computer world. Their answer is, mostly through communications. In addition to the companies that could be expected to talk a lot about modems, local area networks and micro-to-mainframe communications—AST Research, Hayes Microcomputer and also Digital Communications Associates, to name a few—such companies as Apple, Businessland and Compaq are stressing the importance of networks and other communications possibilities.

Maturity, which brought the shakeout, has also brought stability to the personal computer industry. Some of the companies in the market today may yet fail, but almost no one is expecting a major new

Richard A. Shaffer, former technology and science editor of the wall street journal, is the publisher of the computer letter, a weekly industry newsletter.



entrant; market shares will change, but the major contestants are already in the game. Users are beginning to believe that not even IBM can, or will, fundamentally change the specifications of its PC product line, and to believe that the company's next generation of PCs and the generation after that will be compatible with existing PCs. Indeed, the idea of continued compatibility was central to Intel's introduction of its 80386 microprocessor and the joint announcement of IBM and Microsoft that the two companies will work together on future operating systems.

That's a very different outlook from two years ago, when all the talk was of a "killer DOS" or a PC2 that would put clone companies out of business through operating-system incompatibilities.

Industry leaders lately are spending more time trying to manage our expectations, trying to keep us from hoping for too much so that we won't be disappointed. Lotus, for example, tells us that we're never again likely to see a market sensation like the company's 1-2-3.

The industry has become more introspective. For example, at the premier trade show, Fall Comdex, the conversation in the aisles and parties has turned away from memory boards, clock speeds and screen resolution to more subjective matters. Microsoft's Bill Gates recalls going to two panels at which the questions were remarkably nontechnical. "They asked, 'Who is optimistic? Who is feeling like things are going to go somewhere?" and the whole psychology thing," he says.

With increased maturity, the focus of executives is moving from technology to marketing, cost control, distribution, management and motivation. As Software Publishing president Fred Gibbons put it in a remark meant only partly in jest, "We have flushed the hackers out of the system. We're all businessmen now."

And as business people, industry leaders are searching for solutions to problems that are as dull as they are important: How to

price software for corporate buyers that purchase hundreds of copies a year of a single program or want to buy one copy and use it on a multiple-computer network. How to protect publishers from thieves who make illegal copies of programs, and yet not interfere with the legitimate backup needs of customers. How to take advantage of the installed base, to sell new or improved products to a customer who already owns a perfectly adequate computer, monitor, spreadsheet or data base program.

One of these business problems will become paramount this year as the next generation of personal computers and software are introduced for the 1987 market: How to bring new products into a distribution channel that hasn't yet learned how to sell the products it has. A salesman can only be familiar with a limited number of computers and programs, although that number is increasing slightly.

Businessland executive Enzo Torresi used to say that a typical sales representative has a memory capacity of only 64 kilobytes. Lately, he's updated the metaphor. Sales reps, he now says, have a 256k memory—but 192k of it is taken up by Lotus 1-2-3.

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Spotlight Versus SideKick

nce upon a time, the phrase "RAM-resident utility" wasn't known throughout the land of PC-/MS-DOS. That began changing in mid-1984 when tiny Borland International told us we needed a SideKick. A few months later, Software Arts began shipping its utility, Spotlight, complete with predictions that it would follow the company's VisiCalc as a best-seller.

What's happened since has been like a fairy tale come true for Borland, which seems to introduce a software best-seller every few months. For Software Arts, it has been more like a Greek tragedy. Business users resoundingly chose Lotus 1-2-3 and MS-DOS over VisiCalc and Apple; they also chose SideKick, which initially sold for under \$50, over Spotlight, which came out at nearly \$150.

Although Software Arts is no more, Spotlight survived and is now available from Lotus Development Corp. at 55 Cambridge Parkway, Cambridge, MA 02142; (617) 577-8500. Whether it remains a general RAM-resident utility or is tailored into an add-on for 1-2-3 remains to be seen. Because it's still on store shelves as the former, we compared its features with those of SideKick from Borland at 4585 Scotts Valley Drive, Scotts Valley, CA 95066; (408) 438-8400.

Both are loaded from a DOS prompt and reside in memory behind other programs until you need them. SideKick includes a calendar, calculator, notepad, auto-phone dialer and ASCII table. Typing ALT and CTRL simultaneously (or the two Shift keys) brings up a SideKick menu, from which you choose a module. You also can activate the functions individually by typing ALT and N (notepad), C (calculator), D (dialer), L (calendar), or A (ASCII table.) Spotlight includes an appointment book, calculator, DOS filer, index card file, notepad and phone book/auto-dialer. There is no menu; you can activate the functions only individually by typing ALT, SHIFT and A (appointment book), C (calculator), F (DOS filer), I (index card file), N (notepad), or P (phone book).

Spotlight requires more memory to (CONTINUED ON PAGE 171)

Configuration

FEATURES	SPOTLIGHT	SIDEKICK
Memory Required	45k to 112k	5k to 55k
Colors Available	16	128
Modules	Appointment Book, Calculator, DOS Filer, Index Card File, Note- pad, Phone Book with Auto Dialer.	ASCII Table, Calculator, Calendar Dialer, Notepad
Price	\$75.00	\$54.95 copy protected \$84.95 non-copy protected

Calculator

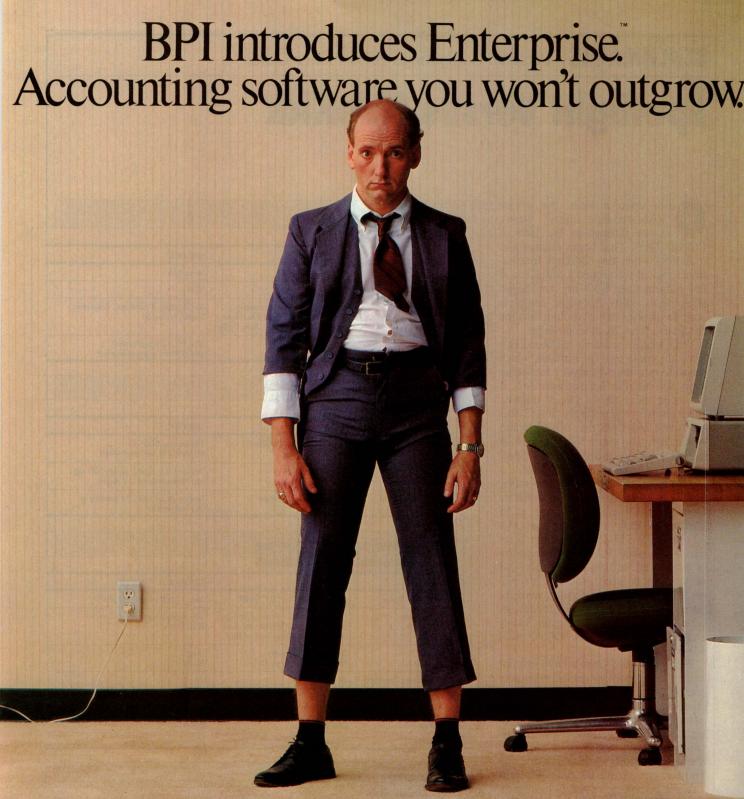
FEATURES	SPOTLIGHT	SIDEKICK
Digits	12; Range .00000000001 to 999,999,999,999	18; Range .0001 to 99,999,999,999,999
Modes	Decimal (12 digits)	Decimal (18 digits), Binary (20 digits), Hexadecimal (12 digits)
Paste Calculated Result	To previous application	To any or all keys for pasting in any application

Appointment Book/Calendar

FEATURES	SPOTLIGHT	SIDEKICK
Range Of Dates	Jan. 1, 1901-Dec. 31, 2099	Jan. 1, 1901-Dec. 31, 2099
Daily Time Segments	15-, 30-, or 60-minute segments; or any segment of your choice. User sets beginning/end of day	30-minute segments, 8 a.m. to 8:30 p.m.
Views	Day, Month, Weekly Meetings, Meetings Only	Day, Month
Characters Per Entry	34	26
Alarm	From 1 to 10 minutes before meeting is scheduled to start	None
Notes	One per day	None
Printing	Full day or appointments only	Appointments only

Notepad

FEATURES	SPOTLIGHT	SIDEKICK
Maximum Size	14 lines to a page; 8 pages	Limited only by disk space
Search Capabilities	None	Find, find and replace
Editing Capabilities	Automatic word wrap, convert notepad contents into text files for use by other programs. Print current page or all pages. Erase current page or all pages. Limited editing, including move up or down by page.	Automatic word wrap, convert notepad contents into text files for use by other programs. WordStar commands if desired. Complete editing, including define block, print or paste block, set right margin; move by character, word, page, window, to top or bottom of file, to beginning or end of line, to beginning or end of block, to last cursor position.



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With its 80286 microprocessor, the COMPAQ PORTABLE II can run all the popular business software written for IBM* Personal Computers. At speeds three to five times faster than the COMPAQ Portable, IBM PC/XT**, and other compatibles.

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Never before has a computer this small been capable of so much. Making the COMPAQ PORTABLE II 30% smaller and 17% lighter—with no reduction in monitor size and a big gain in functionality—was an engineering triumph. The result is a full-function, advanced-technology personal computer that's easy to take on business trips or carry from desk to desk.

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Expandability? An optional 10-Megabyte fixed disk drive stores over 5000 pages of data. RAM expands to 2.1 Megabytes without an expansion slot, and with one expansion slot RAM can expand to 4.1 Megabytes.

Since interfaces for the most popular peripherals are already built in, the two expansion slots can be used for *connecting* your computer to others: add a modem, a networking board, or a board for communicating with your mainframe.

No compromises

The COMPAQ PORTABLE II puts tremendous computing potential within the grasp of every computer user. It's backed by the service and the support of over 2900 Authorized COMPAQ Computer Dealers worldwide. Plus, it's made by the undisputed world leader in portable personal computers. And for that title, there's no competition.

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SPECIFICATIONS

Processor • 16-bit 80286; 6 or 8 MHz clock speed • Real-time clock

Software/Hardware • Runs the most popular software applications written for the IBM PC/XTTM and IBM PC-ATTM and uses the most popular application products developed for IBM Personal Computers

Storage Devices • 360-Kbyte one-thirdheight diskette drive • 10-Megabyte half-height fixed disk drive

Expansion Slots • 2 available slots in all configurations

Memory • Up to 640 Kbytes of RAM on the main system board, expandable to 2.1 Megabytes without using an expansion slot. Maximum system memory of 4.1 Megabytes using only one expansion slot

Interfaces • RGB color monitor, RF

modulator, composite video, parallel printer, and asynchronous communications interfaces

Keyboard • Modified IBM PC-AT layout (84-key)

Display • 9-inch diagonal green monochrome dual-mode monitor • High-resolution text and graphics

Physical Specifications • 17.7"W × 7.5"H × 13.9"D • 45cm × 19cm × 35cm
Options • MS-DOS*/BASIC version
3.1 diskettes and reference guide

• 512/1536-Kbyte system memory board • 512/2048-Kbyte memory expansion board • 512-Kbyte memory upgrade kit • Automatic power switching board (110 to 220 volts)

• 10-Megabyte fixed disk drive

• 360-Kbyte diskette drive • Carrying case • Technical Reference Guide (available O2 1986)

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Conserving Your Keystrokes



by Miriam Liskin

uring the past year, when many of the new entries in the major applications categories—spreadsheet, word processing, data base, and integrated packages—fell flat on a jaded market, one of the few categories of software that did well is the type known as "keyboard enhancers" or "macro processors." These programs eliminate much of the repetitive typing required with computers, and their popularity reflects a rise in the collective level of expertise among computer users.

Enough people have progressed past the stage of struggling to master the basics and are now demanding help from their software in increasing their efficiency and productivity. For the as-yet uninitiated, "macro" is simply a term, rather intimidating and unfamiliar to non-programmers, for an abbrevia-

tion—a short sequence of one or more keystrokes (often a single special function key or a two-key combination like Alt-M) that is translated by the software into a longer string of characters.

There are now a host of macro processors on the market. One of the oldest of these is SmartKey from Software Research Technologies, originally written (and still available) for CP/M-based computers, and now also available in a new version for MS-DOS. The newer macro processors include Borland's SuperKey, ProKey from RoseSoft and Keyworks from Alpha Software. These programs all work basically the same way: They remain resident in memory along with your primary application, and intercept every character you type, passing most along to the application program or the operating system. Whenever you press one of the predefined keys or key combinations, the macro processor will substitute the full translation.

If, for example, you defined Alt-A to represent your return address, you could insert the return address into a letter by

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pressing Alt-A. This process is completely transparent to your word processor (or other application program), which cannot distinguish between the characters you type at the keyboard and the translations the macro processor feeds to the application character by character.

The fact that macro processors are RAM resident is both an advantage and a liability. They are instantly available at the touch of a key, and they permit you to define macros that represent commands, text and numbers, in any combination, including pauses for inserting keyboard input. Most of the current generation of macro processors also offer a selection of advanced features, such as data encryption, the ability to define custom menus, and access to DOS commands from within an application. Since they can be used with all of your other software, you can create a uniform user interface throughout a set of programs that have nothing in common in their command structures. On the minus side, macro processors occupy space in memory (ranging from about 10k to almost 50k) that you may not have, or may need for data or for other, more essential RAM-resident utilities. In some cases, they can cause conflicts with other memory-resident programs or with your primary application.

Separate macro processors are by no means the only way to reduce the drudgery of repetitive typing. Before you buy another piece of software, make sure that you have reached the limits of the tools you already possess. A little time spent reviewing your work habits and learning to make the most of the facilities your applications software and operating system offer for accomplishing the same work with fewer keystrokes can pay valuable dividends.

This analysis involves two steps. First, you will need to monitor your use of the computer for some period of time—perhaps a few weeks—to determine what operations in which applications

involve typing the same key sequences over and over. To document the process, you can use a combination of handwritten notes, printouts produced by toggling the printer echo on with Ctrl-P (in CP/M and MS-DOS), screen prints produced by Shift-PrtSc (IBM PC and compatibles), and screen images captured to disk with a memory-resident notepad utility. The second step is to explore your operating system and your current set of applications programs to determine what facilities they provide that you may have missed when you first learned to use the system. You will find that an increasing number of applications programs offer some form of built-in macro capability, and this is your logical first line of attack.

Macros, which can be difficult and confusing for beginners, are often overlooked long after the concepts would no longer present an insurmountable barrier. Many of the current crop of word processors, including Word Perfect and Xywrite, offer powerful macro capabilities for storing text and commands.

Despite the popularity of the term "macro," you may find this feature disguised under a different name. Microsoft Word, for example, uses the term "glossa-

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ry" to describe the ability to type a short abbreviation and then press a function key to insert in its place the longer sequence of characters assigned to the abbreviation. The usefulness of macros is not limited to word processing applications, dBase II and III allow you to store any character string in a memory variable; wherever dBase encounters the name of this variable preceded by the macro symbol (&), it substitutes the character string for the variable name. For example, you could store the command to USE MAILLIST INDEX MAILNAME, MAILZIP in a memory variable called "U". enabling you to open the mailing list file by typing "&U".

With Lotus 1-2-3, you can type any sequence of keystrokes into a cell or group of cells as one or more labels and give the starting cell a special range name—a backslash (\) followed by a single letter or

number—that identifies it as a macro. You then invoke the macro by pressing the Alt key together with the character used in the range name. With Symphony, you can create macros more easily, using a learn mode that records your keystrokes as you type, so you can see the normal menu prompts instead of having to remember a long and complicated command sequence in its entirety.

s you can see from this handful of examples, not only the nomenclature, but also the methods used to create and execute macros can vary considerably from one program to the next. If you use many applications, and learning all of these different systems seems to present a problem, you may want to disregard your programs' built-in macro capabilities in favor of a RAM-resident

macroprocessor, especially if you have some memory to spare.

Even without any macro facility per se, vou can create your own set of abbreviations with any program that has some kind of global search and replace command, although you will not be able to type an abbreviation and instantly see it replaced with the longer character string it represents. Instead, you must type your entire document using the abbreviations and then substitute longer phrases with a series of global search and replace commands. It may take some time to get used to typing the abbreviations, and obviously, this technique is suitable only when you use the same phrases many times within the same document.

Similarly, if your data base program allows you to globally replace the contents of a field with other data, you can enter the shorter abbreviations into the file, and later substitute the longer text.

A macro processor, as we have said, can enable you to do things like type your entire return address or closing signature on a business letter by pressing a single key. However, with no special software at all, you can eliminate the need to type in even an abbreviated form of the return address, standard salutation, closing signature, or any other constant text by setting up a template document-a file containing the standard, unchanging portions of the letter. This template can then be used to generate a unique document to suit each situation. To create an individual letter, you can either copy the template and edit the copy, or if your word processor permits (and you trust yourself not to make a careless mis-

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take and ruin the template), you can load the template into memory, add to or edit the contents, and then store the resulting document under a new name.

Templates are also especially useful with spreadsheet programs, where you can save a version of each of your models, complete with formulas, headings and graph setups, but minus the individual numbers. Naturally, it will require some time and effort to build up a library of templates, either by typing them in from scratch or by editing existing files.

In addition to, or in place of, a true macro capability, many programs for the IBM PC that use the 10 programmable function keys provide some means for changing the keystroke sequences assigned to these keys. With dBase III, you can change the standard meanings of nine of the 10 programmable function keys to any string of up to 30 characters with a set command at the dot prompt or an entry in the configuration file, con-FIG.DB. With WordStar, you can use the supplied WINSTALL program to assign any sequence of up to six keystrokes to each of the computer's 10 function keys.

ithin Microsoft BA-SIC, which, just like Word Star, will show the function key assignments on the bottom line of the screen, you can reassign the meanings of these keys with the KEY command. For example, the command KEY 7," PRINT " stores the string " PRINT " in F7, so that to begin a PRINT command, you need only type the line number and then press F7. You can see that macros or function keys need not represent a complete command, and you may or may not want to include a carriage return at the end of the string. If you do need a carriage return, you generally cannot enter it into the character string by simply pressing the Return key, which would terminate the current (key redefinition) command.

Most programs therefore use a special character to symbolize a Return, or offer some other method for including a Return in the command sequence. In BASIC, you can use the CHRs function to specify the Return by its ASCII code (13). Thus, to define the F6 key as a complete PRINT command, you would use: KEY 6," PRINT"+CHR\$(13). In Lotus macros, you use a tilde (∼) to symbolize a carriage return; dBase III uses a semicolon for this purpose.

Before you bemoan the lack of more than 10 function keys, remember that you can make the most of the ones you have by assigning them strategically. First of all, you may want to define several sets of function keys for use with different data base systems or types of documents. Also, it is redundant to use the function keys for commands to set program features that can be customized in some other way, perhaps through an installation or setup program.

You can conserve your modifiable key settings and save command keystrokes at the same time by using your software's setup routines to install your personalized default settings for as many commands as possible. This way, you need not waste macro or function key assignments on these tasks, and you can avoid having to issue a lengthy series of commands to customize the working environment to suit your preferences each time you start up

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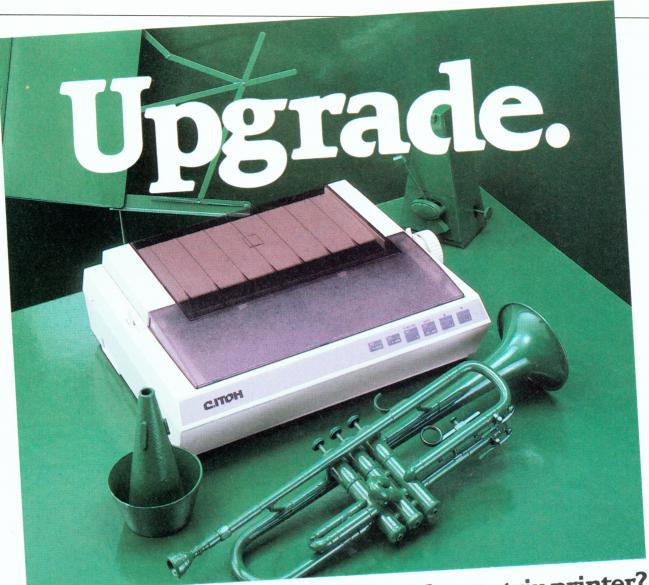
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the software. With many word processors, for example, you can define your own defaults for margins, tabs, line spacing and such options as print control character display, automatic reformatting, right justification, hyphenation and the amount of help information on-screen.

At the operating system level, you can save keystrokes by placing frequently used sequences of commands in batch files (under MS-DOS) or SUBMIT files (in CP/M systems). It can take a noticeable amount of time for the system to read commands from the batch file and, under CP/M, to first load SUBMIT.COM into memory; so unless you are a very slow or inaccurate typist, this method is best suited to lengthy command sequences like the commands required to back up a set of related files on a hard disk onto floppies.

On the IBM PC and com-

patibles under DOS versions 2 and 3, you can use the keyboard redefinition capability of the ANSI.SYS keyboard and screen device driver to change the meaning of any key on the keyboard. This built-in macro capability allows you to use Alt key combinations or any of the 10 function keys to execute commands. Using the ANSI driver for this purpose is not difficult, but the process is hampered by the rather terse and obscure discussion of this topic in the DOS manual.

irst, make sure that ANSLSYS is present in the root directory of your boot disk, along with a CONFIG.SYS file containing the entry DEVICE = ANSLSYS. DOS only checks for the existence of the configuration file when you boot the system, so if you alter CONFIG.SYS to add this command line, you must

reboot afterward. The basic method for redefining keys involves sending to the ANSI driver a command of the following form: the ESCAPE character (ASCII 27), a "[", the ASCII code for the character you want to redefine, a ";", the ASCII code for the new key assignment, and then finally, "p".

For key combinations that do not have standard ASCII codes, such as the Alt key combinations and the function keys, you must use the "Extended ASCII Codes" consisting of a "0", a ";" and the key's scan code. The scan codes for the 10 function keys range from 59 for F1 through 68 for F10; the shifted function keys use the codes 84 through 93, the Ctrl keys, 94 through 103, and the Alt keys, 104 through 113. (You will find a complete list of scan codes in the BASIC programming manual or the IBM

Technical Reference Manual.)

There are several ways of transmitting the redefinition command sequences to the ANSI driver. From most programming languages, you can generate a disk file containing the commands, and then use the DOS TYPE command to send the contents of the file to the display. An easier method for non-programmers is to use the DOS PROMPT command, since whatever character string you define as the prompt is sent immediately to the screen. For example, to assign the command "DIR B:/W" to Alt-F10, you would use: PROMPT \$ e[0;113;"DIR B:/W";13p. In this command, "\$e" is the abbreviation for the ESCAPE character, "0:113" is the "Extended ASCII Code" for Alt-F10, and "13" adds a carriage return to the command string.

The best way to use this mini-macro facility is to create a batch file with a series

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of PROMPT commands to assign the key sequences, ending with a PROMPT command that reinstates the normal prompt. This is necessary because typing the PROMPT command causes the system prompt to disappear, in addition to effecting the desired key redefinition. The command PROMPT \$n\$g restores the standard system prompt consisting of the default disk drive ("\$n") followed by the greater-than sign (">", represented by "\$g").

f one set of function keys will serve your needs, you can incorporate PROMPT commands into your AUTO-EXEC.BAT file so that they are automatically invoked every time you start up your system. This technique, while it works well at the DOS command level, has some severe limitations. First, the ANSI.SYS driver can handle only about

200 bytes of key definitions.

A more serious problem is that the method will not work with any application program that assigns its own meanings to the function keys or any program that bypasses DOS and the ANSI driver and writes directly to the screen. Some experimentation will reveal whether or not your favorite application programs fall into this category, which includes many of the most popular programs written specifically for the IBM Personal Computer. When you redefine the function keys, you might want to leave untouched the standard keys used to edit DOS command lines.

The primary value of these editing tools is the capability they provide to correct an erroneous command without having to retype the entire line, and in saving keystrokes in a series of similar commands. The use of these edit-

ing keys is based on the fact that DOS saves each command line you type, to use as a "template" for constructing the next command. Any character you type replaces the next character in the template. F1 (or the right-arrow key on the numeric keypad) enters the next character from the template into your command line; F2 repeats the entire template up to a specified character; F3 repeats the entire template; F4 deletes the remaining characters in the template up to a specified character; F5 redisplays the contents of the template and allows you to continue editing (instead of executing the command); INS causes subsequent typed characters to be inserted into the template; and DEL will delete the next template character.

As an example, suppose that after typing the command COPY C:\DBASE\MAILLIST\

*.DB F B:\DBASE\ARCHIVE, you realize from the resulting error message that the name of the directory on drive B: was not DBASE, but DBASE2. To edit this command, you could press F1 repeatedly to copy into your new command line the contents of the template up to the "E" in DBASE, press INS, type 2, press F3 to repeat the rest of the command, and finally, press Return to execute the edited command. If you next wanted to back up all of the index files on the same floppy disk, you could repeat the entire template up to the "." by pressing F2 and then typing ".", using F1 to copy the "." into the template, typing NDX to replace DBF, pressing F3 to complete the command; and finally, using Return to execute it.

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- Exasperated 1:16

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PRODUCT REVIEWS

A critical look at the latest computer hardware and software.

Compaq's Newest '286' Portable

compaq portable II is a 80286-based, transportable personal computer that comes minimally configured with 256k bytes of RAM, one 360k floppy disk drive, a monochrome monitor, clock/calendar functions, serial and parallel ports, an RGB color display port, a 80287 math co-processor socket, and two open expansion slots; \$3,300 retail; same with a second 360k drive, \$3500; same with 640k of memory and a 10 Mb hard disk, \$4,900 retail; Compaq Computer Corp., 20555 FM 149, Houston, TX 77070; (713) 370-7040 (Circle 179).

compaq's first personal computer, a suitcase-size IBM compatible, has inspired its share of clones—even from Compaq. Now comes the official sequel to the lauded luggable: the Compaq Portable II. The new portable is an attractive mix of some things old, like transportability, and some things new, like speedy "286" processing power. And it's all in a box that could fit (if barely) inside the original Compaq portable.

The Portable II, in sheer hardware muscle, is actually more akin to Compaq's newer Portable 286 than the original 8088-based machine. The Portable II, like the Portable 286, races along under the auspice of the Intel 80286 microprocessor and the MS-DOS operating system. The new computer is also designed to be every bit as compatible—with the IBM PC/AT and, to a large extent, the PC—as the Portable 286. But the Portable II is smaller, lighter, cheaper, and less adaptable than the Portable 286.

The Portable II comes in three models. The Model 1 has 256k bytes of memory, one slim 360k floppy drive, a 9-inch (diagonally) monochrome monitor similar to all other Compaq portables, clock/calendar functions and the required connectors for a printer, a modem and an RGB color monitor. The Model 2 adds a second 360k floppy drive, while the Model 3 comes with one floppy, a 10-megabyte hard disk and 640k of RAM. All three models are the



Compaq Portable II is noticeably smaller and lighter than previous Compaq portables.

same size outside and sport two open, full-length expansion slots inside: one 8-bit slot for most PC-type circuit cards and one 16-bit slot for PC or AT-type boards.

At prices that range from \$3,300 to \$4,700 approximately, the Portable II is not inexpensive. But its pricing compares favorably to Compaq's Portable or Deskpro 286 and the IBM AT.

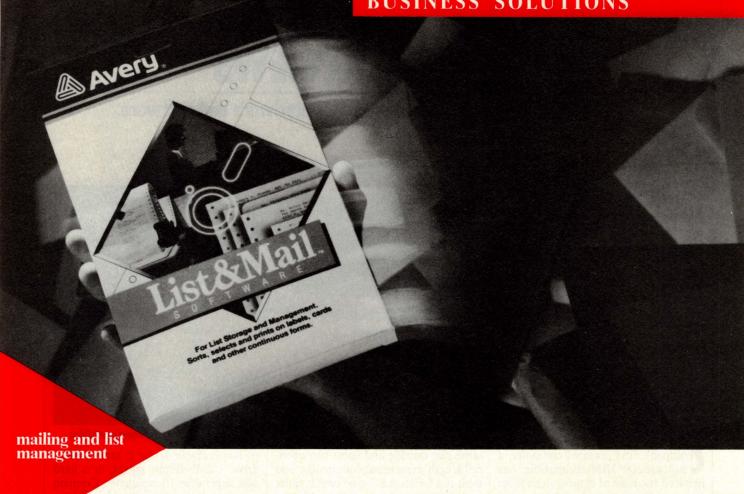
The most noticeable difference between this and other Compaq portables is size. The Portable II is less than 18 inches wide and 14 inches deep, and just 7.5 inches high. Those dimensions won't put the Portable II on your lap, but it's an inch or two smaller than the other Compaq luggables all the way around. That reduces the required desk space (with keyboard unfolded) to about 22 by 18 inches, and makes tucking the machine under an airline seat a bit easier. There's still the padded leather handle and an optional carrying case for travelers.

A smaller portable, fortunately, is a lighter portable. Compaq has trimmed the Portable II down to about 26 pounds (not a featherweight, but getting better). It's also a more attractive package, with a light gray face replacing the black front of earlier Compaq portables.

What got left on the drawing room floor in whittling the Portable II down to size? There are now only two open expansion slots, as opposed to three in earlier portables, and there is no provision in the Portable II for a tape backup drive, 1.2Mb floppy drives, or a hard disk larger than 10 megabytes. Compaq points to the unit's smaller size and the extra space needed for the hard disk's shock mounting as reasons for the limited selection of storage devices. But there is, in fact, sufficient room inside for a bigger hard disk; and a 1.2Mb floppy could, theoretically, be substituted for a 360k drive. These items, particularly a larger hard disk, may or may not be eventual options for the Portable II.

he loss of an expansion slot is cushioned by the fact that you can add up to 2.2 megabytes of memory and a hard disk to the Portable II without touching a single slot. Compaq sells a special expansion board that connects underneath the main system board to add anywhere from 512k to 1.5 megabytes (1536k) of "extended" memory. (As in the IBM AT, extended memory is RAM above 640k that is not directly addressable by most applications software.) You can upgrade a 256k system to 640k of conventional memory by replacing socketed 64k chips on the motherboard with 256k chips. The Portable II's internal hard disk, whether purchased with the system or added later, does not require that you add a controller card—thereby saving a slot.

There appears to be nothing lost in the area of compatibility. The latest versions of PC-DOS, Lotus 1-2-3, Sympho-



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ny, Framework II, dBase III, Microsoft Word, WordPerfect and ThinkTank all ran without apparent trouble. As expected, a few programs that do not run on the IBM AT, like Lode Runner and an older version of Flight Simulator, also did not run on the Portable II.

The Portable II not only runs many programs, but it can run them very quickly. Coupled with a lightning fast hard disk, another trademark of its Compag 286 predecessors, the Portable II is a dramatically speedier machine than an IBM PC/XT or a Compaq Plus. As in earlier 286 machines, Compaq has given the Portable II's microprocessor a low gear (6 megahertz, like the AT) and a high gear (8 MHz). You can switch speeds from the keyboard. In use, there appears little difference between the two speeds; both pump through results in a hurry. The high-octane hard disk polishes off even disk-intensive procedures like loading and saving files very quickly.

Concerning the monochrome display, what you see on other Compaq portables is largely what you get with this portable. The small, built-in screen still displays sharp green characters and leaves a "ghosting" trail when it scrolls, due to its long-persistence phosphor. And it still incorporates Compaq's clever "dual-mode" design; you can switch, from the keyboard, between a text and graphics display. (The graphics mode enables you to run an external color or monochrome monitor.) The viewing angle is much better than previous portables, thanks to the new machine's support brace. But the display of the Portable II is noticeably dimmer than older models, and it lacks contrast. Compag says it is looking into the problem.

Essentially, the keyboard layout is that of the IBM AT and the typing feel is that of other Compaq computers—in other words, excellent on both counts. There is one major change: The ten function keys are situated across the top of the keyboard, horizontally, decreasing the width of the panel. The keyboard still serves as the computer's lid, folding up and snapping into place when you're ready to go.

The Portable II, says Compaq, is its "new generation" portable computer. If you liked what you saw in the older generation, and you crave the speed of a 286 computer, the Compaq Portable II should be on your shopping list. It's the smallest, lightest bundle of "286" power and IBM compatibility available.

-Christopher O'Malley

Microsoft Windows Includes Extras

environment for the IBM PC and compatibles. It comes with applications that include a word processor and communications and paint programs; and several utilities, such as a calculator and notepad. Windows requires 256k of memory and a graphics card; \$99 retail; Microsoft, 10700 Northup Way, Bellevue, WA 98004; (206) 828-8080 (Circle 180).

A fter a two-year delay, Microsoft has finally shipped its Windows operating environment. Windows is an extension to Microsoft's own MS-DOS operating systems and brings a Macintosh-like graphic user interface to the IBM Personal Computer.

Upon loading Windows, you are no longer faced with the A prompt. Instead, your screen is transformed into a desktop with icons, windows and pull down menus. The opening window is called the MS-DOS Executive and is basically a list of files in the default drive or directory. Pull down menus available near the top of the screen let you perform most of DOS's basic functions, such as copy, delete and rename.

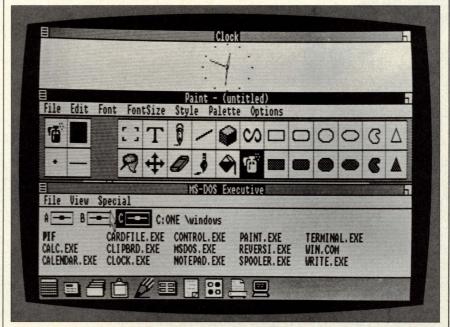
You don't have to use a mouse with Windows, but it works best if you do. You can run programs by simply pointing the cursor at them with the mouse and clicking twice. Or you can load a program and it will appear as an icon on

the bottom of the screen. Changing directories or drives no longer requires typing strings of commands—you can click on an icon that looks like a drive or click on a backslash next to the drive and return to the top directory.

A number of windows can be opened, with programs running simultaneously in each one. Unlike the Macintosh, Window's windows don't overlap, but sit next to each other—lined up vertically or horizontally. Pull down menus change size to remain on the screen even when a window is shrunk down to its smallest size. The windows can be enlarged to fill the entire screen or reduced in height.

hile some programs will run in a window, most popular applications can only be run from Windows with the help of a special file provided with the program. Once executed, programs like Lotus 1-2-3 function pretty much as they do normally. One difference is that when you exit Lotus, you are back in Windows. Another difference is that you can press the Alt and Print Screen keys simultaneously while in a program and take a "snapshot" of the screen that can later be called into Windows for touching up with Windows Paint and placed into a memo with Windows Write.

Programs that will run automatically in a window are the operating system's COMMAND.COM, Microsoft Multiplan and Microsoft Basic. Other programs that automatically run in windows come



Clock, Paint, MS-DOS occupy separate windows. Icons at bottom open other windows.

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with the operating environment. Windows Paint is a rudimentary paint program; Windows Write is a word processor on the level of MacPaint, with changeable fonts and font sizes; Terminal is a communications program with automatic log-on and capture capabilities; Spooler is a print spooler that lets you work with Windows while printing; and Cardfile is a basic file manager.

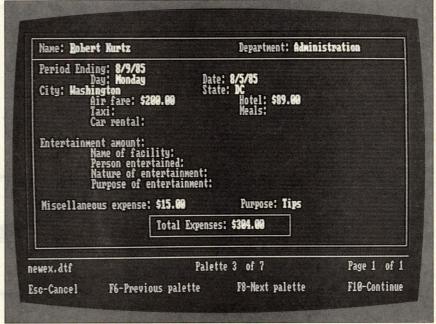
Other utility programs include Notepad, which offers an area to jot down notes; Clock, an analog-looking clock that displays the correct time even while an icon; Calculator, a full-functioned calculator; and Reversi, a dot game. A control panel lets you set up and use more than one printer and adjust other aspects of Windows, while a built-in clipboard lets you exchange information from one window to another with Cut and Paste commands.

Windows is a software engineering marvel. It automatically swaps programs and files in and out of memory and back onto disk to make sure you never run out of memory. While this feature is impressive, it also means that Windows works best when used with 640k of memory and a hard disk. (It can also be configured to run with Intel's Above Board.) But even with these highpowered tools, Windows tends to bog down rather quickly when more than three programs are running or even loaded. Too many programs eventually delay the system to the point where you may think it has crashed. Nevertheless, this memory swapping feature gives Windows greater flexibility than operating environments that are simply used as program selectors. Windows serves well with three programs loaded.

The value of Windows can not be overstated, since you receive the functional equivalent of PFS:File, Access and Write, MacPaint and SideKick along with Windows and all its integrating powers. Many of these Windows programs fall short of their popular counterparts, but they're certainly adequate for the average user at \$99.

Should you use Windows? To really tap its power, you need to use the programs that come with it, and that may not be desirable for many users who are already up to speed with their favorite applications. But if you're just starting out or have a strong desire to turn your computer into a multitasking machine, it is unlikely that a better technology than Windows will come along—even in the next two years.

-Jim Bartimo



Q&A lets you design a form to list the various items of an expense account report.

Q&A: Customizing Your Data Base

Q&A runs on the IBM Personal Computer, PC/XT, PC/AT or compatibles; requires 512k RAM, two floppy disk drives or one floppy and a hard disk; \$299 retail; Symantec Corporation, 10201 Torre Avenue, Cupertino, CA 95014; (408) 253-9600, (800) 556-1234 or (800) 441-2345 (Calif.) (Circle 177).

The first thing we did after installing Q&A on a hard disk was give its "Intelligent Assistant" a new name. We christened it Genie. "Intelligent Assistant" may be more descriptive of the natural language interface that enables a user to communicate with a data base. But we like the sound of Genie. (Bean Counter ran a close second.)

As we said in our first look at Q&A (October, 1985), the natural language interface module is unique. But Q&A is far more than just a data base you can talk to in your own words. Its integrated modules add up to a nifty business program that's also fun to use.

The Bean Counters of the world may yearn for a spreadsheet, which Q&A doesn't have, but we're so accustomed to Lotus 1-2-3 that we don't mind that Q&A is one integrated package without a spreadsheet. Besides, we can import 1-2-3 files into Q&A for analysis.

Q&A has five modules: Write, Report, File, Utilities and Intelligent Assistant. (You can rename it as long as

you don't exceed 21 characters.) Write, Report and File are familiar, both in name and operation, because they're very much like Software Publishing's PFS line of the same name. But Q&A's Write, Report and File aren't mere knock offs. Write, for instance, includes a macro recorder and a Draw command if you want organizational charts.

File, the data base component, and Report can be used alone or with the Intelligent Assistant. You would get your money's worth from Q&A even if you never used the Intelligent Assistant module. But you would be passing up the fun.

If you do a monthly report, for instance, you could instruct the Intelligent Assistant to compile and print the report every month. Or you could choose Report from the main menu and accomplish the same thing without using the natural language module.

data bases, including Q&A. Like PFS:File, it is a flat data base. Relational data bases gather information from more than one file at a time. But if you design your forms with due care, a flat data base can be quite useful. Designing forms in Q&A is a matter of putting what you want where you want it on the screen. You do have to be careful about moving fields once you've begun filling out forms, or you could cut off the end of your data.

A new addition to Q&A is a spelling
(CONTINUED ON PAGE 153)

M

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So the most reliable floppy in

the modern contraction of the modern contrac

the world can be even more reliable.

So you can worry even less about the floppy you didn't have to worry about anyway.

One less thing to worry about."

Smart vs. dBase III:

The difference is power.



There are two simple rules to keep in mind about data base software:

Rule #1: the more it does, the more you'll accomplish.

Rule #2: the faster it works, the faster you'll finish.

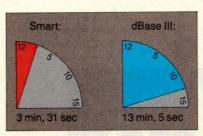
With that in mind, we direct you to the two charts, where you'll discover what thousands of business people already know.

The most popular data base may be dBase III.

But the most powerful is Smart.

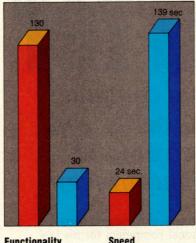
Naturally, we don't expect you to be convinced by just a couple of charts. So, consider these facts:

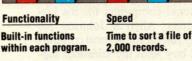
- Smart allows nearly 400% more characters per field than dBase III.
- Smart also provides twice as many fields per record.
- Smart lets you create up to 15 custom screens per form. With dBase III, you're stuck with one.
- Smart has calculated fields, time fields, and a choice of fixed or variable length records.
- Smart has built-in, asynchronous communications. dBase III doesn't.
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Report from a file of 2,000 records with one lookup to disk.

They're all part of the unique Smart Software System — not a "bundled" program, but powerful standalones that work so well together *Software Digest* (December, 1985) named Smart the industry's best integrated system — beating out the five other top-selling integrated packages.







And then there are two other advantages Smart has over dBase III:

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For information, call 1-800-438-7627 (in Canada or Kansas call (913-492-3800), or write: Innovative Software, 9875 Widmer Rd., Lenexa, KS 66215.

The Smart Data Base Manager (For More Information Circle 47)

Buying Smarter

Buying personal computer products has its perils. But you can sidestep difficulties with the right strategy.



hen Lyle Johnson took responsibility for buying personal computers for his law firm, McNamee, Allen & Johnson, he didn't simply run off to the local computer store and buy what the salesman suggested. The first thing he did was evaluate the San Jose, Calif., law firm's needs. Since document handling and correspondence were the primary duties of the sup-

port staff, he looked into word processing software at the same time he compared computers. He finally decided to buy several CP/M personal computers because he discovered they could handle his office's word processing needs and were generally less expensive than MS-DOS computers.

Knowing what he wanted, Johnson looked for the best deals he could get. He found them in some unusual places: a computer auction at a Silicon Valley company, a neighborhood used computer store and through a friend's employee purchase plan. He ended up buying three Morrow computers, with either WordStar or NewWord (a program much like WordStar) included; a Bondwell 14 (a CP/M computer); a Hewlett-

Advantages You get to see different products demonstrated; potential for continued support. Disadvantages Higher price.

Problems Stores are crowded; salespeople can use incomprehensible jargon or push products they get a higher commission on.

Strategies Ask questions; try before you buy; bargain on price; get promises in writing.





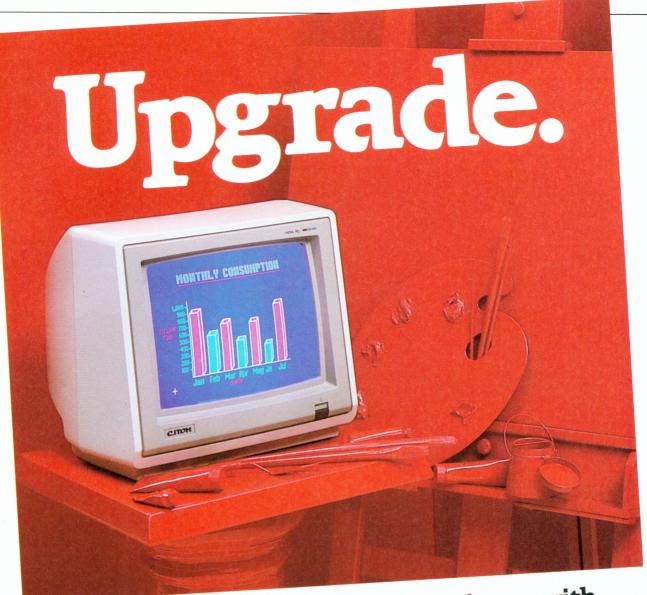
Advantages Lower price; you may get software and/or add-in boards thrown in for free.

Disadvantages You probably will have to buy older technology; no warranty from producer.

Problems Used computer stores are hard to find; classified ads may be false.

Strategies In stores—check printer heads and run diagnostics; check up on classifieds.





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Packard Laserjet printer; and an assortment of other peripherals. "We have saved anywhere from 20 to 25 percent buying personal computers this way," he says. But he goes on to warn: "People who aren't knowledgeable about computers should pay the 20 percent more for the support and service they'll need from the retailer."

Johnson's alternative buying strategy is emblematic of the many options available to computer buyers today. Especially for people who are buying their second personal computer or add-on equipment and know what they want. But buying intelligently takes planning, time and caution. Like Johnson, you should first determine your needs and goals. Don't only think about today, consider your future needs as well. Then you have to weigh the importance of service and support against a lower price tag. With a strategy in mind, you can start hunting for the best deal. This means checking out all the avenues: retail stores, used computer dealers, mail order catalogs, the personal ads in newspapers and magazines, even a friend's employee purchase plan. And remember, each method of buying has its own perils.

Most buyers of personal computers still turn to the retail store first. At least there you can get a chance to see how a particular computer works and compare software alternatives firsthand. Elaine Ratner knew that she needed this kind of support. She was buying a computer for the first time and wanted to have a salesperson show her how to get started. But before she went to a computer store, she did some preliminary investigation by reading magazines and talking to friends. "I started by looking for the right kind of software," says the Oakland, Calif., writer, who is currently coauthoring a cookbook called "Dessert at the Stanford Court." "I decided I needed Xywrite II Plus because it could index and that's very important when you're doing a cookbook."

Next, Ratner scoured the Sunday newspapers and looked for the best price she could find on an MS-DOS computer because Xywrite only runs on MS-DOS machines. She ended up at a Berkeley store that had the lowest price she could find on a Leading Edge Model D. Ratner was interested in the Model D because its lower price meant she could also afford a hard disk. By the time Ratner's shopping spree was over, she had an Amdek monitor, a Diablo printer and a Model D with a 10-megabyte hard disk.

Ratner's strategy for buying her computer setup worked very well because she did some upfront planning before she went to the store. Once there, she let the salesperson know that she was a novice, but that she knew what she wanted and why. When her purchases were made, the salesperson even installed Xywrite on the hard disk for her.

While the retail store is a good place to shop if you want to see different systems at work, there are things to watch out for. You can expect to wait for a salesperson's attention, since most stores are quite busy, especially on Saturdays and during lunch hours. But if

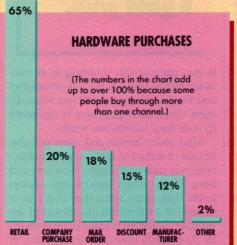
Where You Buy: A Reader Survey

recent survey, conducted by Personal Computing of more than 1,000 of our readers, indicated how you buy computer products. Most of the respondents still make their purchases through a retail outlet, but not all of them are completely happy with the service and support they receive. It is perhaps this sentiment that has influenced so many to search out new ways of buying hardware and software, from mail order to discount stores and from the manufacturer directly.

While 65.4 percent of the survey respondents buy their soft-

ware through retail or software stores, 30.4 percent buy through mail order. A surprisingly large number of the respondents, 18.3 percent, indicated that they buy directly from the manufacturer, and 16.5 percent buy at a discount or department store. The fact that purchases made in department and discount stores were fewer than most other buying methods reflects a need to buy powerful computers, found mainly in computer-only outlets. Other buying methods account for 7.3 percent. (The total of the percentage figures here is larger than 100 percent because people buy from more than one kind of outlet.)

Readers were less eager to shop by mail order when it came to hardware purchases. Only 18.2 percent said they buy peripherals through this channel of the market. Al-



most exactly the same percentage of hardware purchasers as software buyers, 65.3 percent, shop at retail. When it comes to ordering through the company, 20.4 percent said they go this route, while 14.6 percent said they buy hardware through discount and department stores. Direct sales accounts for 12.4 percent of our readers' purchases and all other channels account for 1.8 percent.

Although the majority of readers shop at retail, our survey indicated that they don't always like the service they get. When asked how they felt about the statement "Computer store salespeople are

helpful and informative about applications," more than half disagreed (37 percent "somewhat disagreed" while 16.3 percent strongly disagreed). A clear minority agreed with the statement (7.5 percent agreed strongly and 34.4 percent agreed somewhat).

The figures in the survey seem to reflect a desire to buy smarter. Even though buying at retail may be more expensive and require persistence to get the service you want, if you need support and service, it can be worth the extra cost and trouble. If you know what you want, and it's not a high risk purchase, then the other market channels, offering a lower price tag, may be the smartest choice.

-J.B.

you have to wait too long, you may be in a store that is understaffed. When a salesperson does help you, he or she may already be thinking of the next two customers waiting in line. If you can't get the kind of attention you want, it's time to walk out and find another store.

Once you've found a salesperson who will listen to you, explain—as Ratner did—what you are looking for and why. If the salesperson responds with a stream of unintelligible jargon or what sounds like a memorized pitch, or even a simple, "This-is-the-baby-for-you" approach, then that's not the right salesperson for you. For a \$1,000-plus purchase, you deserve serious attention and honest answers.

And you should be asking lots of questions, not only about the system you need and how it will meet your future needs, about service contracts and support, but even about the parts a computer comes with. This last question is important because retailers have been known to substitute manufacturer-approved parts for cheaper versions. Of late, some retailers have taken to switching a low-speed hard disk for the high-speed disk drive that is supposed to come with an enhanced IBM Personal Computer AT, claims Hal Prewitt, president of Core International, a Boca Raton, Fla., manufacturer of hard disks, and a retail outlet. While the dealer charges less for the AT, he is, in fact, making much more profit. "It's one of the biggest scams going on," says Prewitt. "People are paying for AT performance, but getting PC/XT speed."

How widespread such practices really are is hard to know. But the lesson to be learned is to take nothing for granted when buying a computer, peripheral or software package. Most retailers are honest businessmen, but some may resort to unethical tactics to survive in a highly competitive market. The AT hard disk scam is one example of how an unsuspecting buyer can be taken in. To avoid a situation like this, be prepared to ask specific questions about the product in question. "Is it the latest version?" and "Are all the components approved by the manufacturer?" are questions you should ask.

Once you've decided on a purchase and have asked all the right questions, you shouldn't be afraid to dicker on the price. Like car salespersons, a computer salesperson has margins to play with, depending on how much he or she wants to make on a sale. Ask to pay a couple of hundred dollars below the list price and see the reaction. You may not get anywhere, if you're already looking

at a rock bottom price, but it never hurts to try.

There are other alternatives for buying computer systems, especially if your primary concern is price rather than support. Mail order is one such alternative. Mail order houses advertise in computer magazines and newspapers. They will also send you a complete catalog of products that can include everything from complete systems to monitors, hard disks, modems, cables, static pads and solutions to clean your screen. What makes mail order especially nice

"I buy the computer from a dealer and then buy the guts of the thing by mail order for a good price."

is that comparison shopping is as easy as thumbing through the ads or catalogs and marking the products you want. In most cases, the equipment is delivered to your door within two weeks.

Mail order houses sell most popular brands of software, add-in cards and peripherals such as printers, monitors and hard disks. Their prices are always lower than retail since they don't have to pay for a storefront or support of the product. Software prices can be as much as 50-percent lower, as in the case of MECA's home finance package, Managing Your Money, which sells for about \$200 retail and about \$100 mail order.

Some software companies object to mail order sales because they feel such a low price tag makes retail-level support impossible. Lotus 1-2-3 maker Lotus Development Corp. doggedly tracks down mail order houses that carry its product and then cuts them out of distribution. But even if you buy 1-2-3 through mail order, Lotus will still support you with its telephone support line.

There is no retailer support when you buy mail order, so you have to either rely on the company that manufactures the product (and be ready to make some long distance calls to support lines if you have questions) or be sure you won't need a lot of help with your product. An add-in card is pretty straightforward, but dBase III takes some time and guidance to master.

Merrill Cobb, president of Seismic Exploration Corp., in Huffman, Texas, not only supplied his own company with mail order equipment, but has made a sideline business out of buying mail order products and then reselling beefed-up computers to local businesses. "I buy the computer from a dealer and then buy the guts of the thing through mail order," Cobb says. "With the discounts given through mail order, I still beat the retailers' prices and make a profit."

In his main occupation, Cobb helps drilling companies by using seismic equipment to search for oil and gas. He uses an Apple IIe computer for word processing and a Panasonic Senior Partner for Lotus 1-2-3 spreadsheets. Buying mail order for the computing needs of his company is the simplest and quickest approach, he says. "It's a whole lot easier to pick up the phone than drive 5 to 50 miles for the best price. I know all about installing cards and cables, so I don't need to pay extra for the support."

Cobb has had only one problem in his years of ordering through the mail, and that occurred in February of 1985. When he ordered a mouse for his Apple IIe, the mail order house cashed his check and then told him they were out of the product. Although they promised to give Cobb a refund, the company neglected to send back the \$100. Ten months later, Cobb still didn't have his money.

Postal regulations require a mail order company to notify customers within 30 days of an order if an item is out of stock. The mail order company must offer to refund the money, and if the customer does not reply to the notice, the company can then assume he is willing to wait until the item is in stock, according to the Direct Mail/Marketing Association in New York City.

Shopping by mail order—for computers or any merchandise—is not without its perils. Whenever you agree to buy something sight-unseen, there is a risk that problems will arise. But, by taking the necessary precautions, you are likely to receive convenient and economical service from the selected seller.

One of the best ways to protect yourself when buying mail order is to always pay by credit card. If something does go

wrong, and a check has already cleared the bank, you may have a more difficult time getting your money back. You're less likely to get stuck if you have a credit card company on your side.

Look at the fine print in an advertisement or a catalog, and read the order form carefully. Some mail order companies list lower prices on products, and then tack on a surcharge for paying by credit card. Others may list lower prices but charge an up-front membership fee to order at all. There's nothing wrong with either of these practices, as long as you account for the added cost.

You shouldn't jump to buy from a mail order house. First see if their ads appear consistently—if so, it suggests that the company is solid and stable. As a general rule, don't order from a firsttime advertiser. You should also be wary of post office box addresses. The company should list its address and phone number so you can order by phone and make sure it really exists.

Another alternative to buying at retail is buying used equipment. You can save 30 percent or more going this route. And, unlike a car or household appliance, a computer does not wear out significantly in a year or two. In fact, a year-old used computer is less likely to break down than a brand new one, since a new one could have a bad chip in it that will take a month or more to burn out completely.

As with buying a new computer, purchasing a used one requires that you make decisions about your specific needs. One difference, however, is that you'll probably have to travel some distance to find a used-computer store, or correspond with a store in another state. The other alternative is to hunt through classified ads.

At the oldest used computer store in the United States (three years in business). Interstate Computer Bank (ICB) of Mountain View, Calif., buyers have found as much user support as could be expected at any retail computer store. "I went to three retail stores and was very turned off because they talked over my head," says Jim Fraser of Los Altos, California. "The guys at ICB will sit down with you and help you put together a system."

Fraser wanted a computer so his wife could run her real estate franchise and his children could use educational and game software. Instead of paying full price at a retail outlet, he bought three used Apple II Plus's, a modem card, a printer, memory cards, a Z80 card and two color monitors from ICB. "It's like buying a used car-you pay much less,"

Smart Shopping Tips

KNOW WHAT YOU WANT Before you walk into a computer store, you should have done some advanced investigation by reading product reviews in magazines, looking through the feature descriptions in ads and/or talking to someone in your company's data processing department. This will make it easier for you to narrow down your selection.

DON'T SHOP ON PRICE ALONE | Sometimes the least expensive price translates into the shoddiest service, or worse, some unscrupulous practices. If you need the support, be prepared to spend 5 or 10 percent more.

BE INFORMED If you keep up with what's new, there's no chance you'll end up making a purchase that is better for the dealer than for you. A product that is—or is about to become—out-of-date is the best sale for the dealer because it clears his shelf, but it's the worst sale for you because you miss the latest in technology.

EVALUATE THE COMPUTER STORE Before you ask for help, look around and listen. Are other people being helped promptly by intelligent sales professionals? Are customers coming in with complaints? The quality of the store will reflect the quality of the purchase.

TRY BEFORE YOU BUY Because dealers sometimes have limited stock, they may ask you to test a different model of computer than the one you'll be buying. Be wary. A hard disk model, for instance, is much faster than a floppy system, so you might expect performance you won't get with the product you purchase.

GET ANY PROMISES IN WRITING If the dealer promises to come to your office or house to set up the computer, make sure it says so in the sales contract or the bill of sale. Otherwise, there is nothing to bind the dealer to his or her promises made in the heat of the sale.

CONSIDER MAIL ORDER If you know exactly what you need and want to shave a few dollars off the price, a reputable mail order firm may be the right place for you to shop. What you give up in support, you'll save in cash. But, order by credit card—if anything goes wrong, you'll have better

USE A WELL-ESTABLISHED MAIL ORDER HOUSE Don't buy from a mail order house that is advertising for the first time. And don't buy from a company that doesn't list a street address and phone number.

DON'T RELY ON ONE SOURCE Take cues from the way the mail order house treats you. If it takes 10 phone calls to find out if they have what you want and to take the order, then you should use another mail order company. If they are out of the product you want, don't wait for them to get

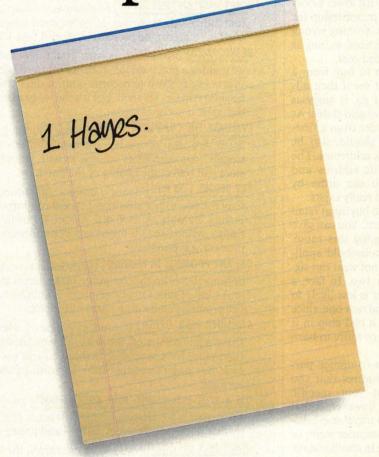
BEWARE OF NO-NAME PRODUCTS Whether you're buying retail or mail order you should generally avoid outdated models or products from companies that are no longer in business-even if there are specials on them. You can, of course, save money this way, but only if you are aware of the warranty limitations and other drawbacks.

CONSIDER A USED PRODUCT | Newspaper ads and a few used computer dealers can outfit you with hardware nearly as good as new, but at half the price. Remember, however, that you're likely to be at least one step behind current product cycles when you buy used hardware. And, be aware that electromechanical devices such as disk drives and printers may be the worst products to buy used.

LOOK FOR A CORPORATE BUYING PLAN Before you pay full price or shop by mail order, check to see if your company has an employee purchase plan that offers computer products at a discount. Be persistent, since a lot of corporate buying plans are not well publicized.

-J.B.

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he says. "For example, you can get an Apple disk drive for \$100 instead of the \$225 that they cost new."

Actually, disk drives and printers are among the only products that may suffer wear and tear as the result of use, since they have moving parts—mechanical equipment is likely to break down with increased use. These products can still be good buys on the used market, but inspect them carefully before buying and ask how much they've been used.

Look closely at the printing head of a printer to see if it's worn down at all and note the quality of its printing; look for smudges or blurs. In the case of disk drives, it's best to run some diagnostic tests, such as those that usually come with a computer system. IBM and compatible personal computers, for instance, include diagnostic programs on the DOS disk to test disk drives.

Another difference in buying used equipment is that you'll most likely have to settle for equipment that is slightly out of date. Apple II Plus's, for instance, are plentiful in used computer stores and in the classified ads, but are at least one generation older than the new Apple IIe's and IIc's.

But at a savings of 30 percent or more, you may find that yesterday's personal computers fit perfectly well into your buying strategy. If you need to do a lot of word processing and don't mind using software that runs on older machines, a used computer may be the best buy for you. Again, it's all really a matter of what you plan to do with your machine.

One of the disadvantages to shopping through a used-computer store is that your equipment will be warrantied by the store, not the manufacturer. If a machine breaks down after you bought it used . . . well, it may be your problem if the store no longer exists. And if you buy used equipment through the classified ads, you're definitely on your own. But the savings may even be bigger—up to 50 percent—that way.

Shopping through the classified ads of your local newspaper or a regional speciality newspaper on computers has another advantage over the used computer store: The seller may throw in add-in boards and software for free.

"There are a lot of used IIe's and II Plus's around in the classifieds," says Stan Politi, publisher of Computer Currents, a regional computer newspaper out of Berkeley, California. "They're so popular that the seller can turn around a machine with one ad, if he's not asking too much."

"We haven't gotten any complaints about buying used computers through the classifieds," Politi says. "We get more complaints about dealers who are playing 'bait-and-switch' [i.e., advertising products in short supply to attract buyers into the store] with the display ads we run."

People who look for used computers are usually building a buying strategy around discounts. Some people are lucky enough to get discounts on brand new equipment, through an employee purchase plan. Naturally, buying this

"I didn't do any legwork to get a good price; my company did. I just shopped to see that it was a buy."

way has many advantages, since you end up with current technology, service from the manufacturer and a low price.

Most corporate buying plans work in this way: A corporation will buy large quantities of computers at a discount from the manufacturer and then pass the savings along to their employees. The advantage to the corporation is that a participating employee then has a computer at home on which he or she can do office work. The advantage to the employee is a lower price tag, and often, the assistance of an in-house computer salesperson.

Margo Levine's buying strategy revolved completely around her company's buying plan. In fact, she probably wouldn't have purchased a computer if it weren't for the plan. As a principle partner at the management consulting firm of Temple, Barker & Sloane in Lexington, Mass., Levine wanted a computer she could use at home to cut down on late hours at the office. She also wanted a computer that was transportable enough to take with her when she goes for weekends to New Hampshire.

Levine bought a Compaq portable

with a hard disk through her company's purchasing agent, who—by buying in large quantities—received a 25-percent discount off retail prices. To further encourage Levine, her company kicked in a full 50 percent of the remaining cost, as long as she stayed at the company for a year or more. "I shopped around just enough to know that I was getting a good price," Levine says. "I didn't have to do any of the legwork to get a good deal; the company did it for me."

The only problem with a corporate discount plan is finding out how to take advantage of one. United Technologies of Hartford, Conn., for instance, has an arrangement with Zenith Data Systems to provide computers at a discount to employees. But no one from the data processing department up to the editor of the in-house computer newsletter knows how to actually buy one. Ask your fellow employees first—news of a good deal usually travels much faster through the grapevine than through official channels.

If your company doesn't have a purchase plan, they may offer in-house seminars on how to buy a computer at a retail store. These seminars can be worthwhile. And at a minimum, you'll make contact with an internal data processing person or the company guru—people who can advise you about a system strategy and help you if you run into technical problems after you've made a purchase.

There's no question that a computer system is a major purchase requiring hands-on testing and an exploration of alternative buying methods. And once the system is purchased, there is still a continuing need for software and peripherals.

If, for instance, you need a hard disk to add to your system, you can go into a computer store, test various models and compare prices. If you need a data base product, computer stores will usually have dBase III and two or three other full-featured products to compare. While store personnel can't give you a course in relational data base management, they can explain the difference between a file manager and a data base.

While there are many ways today to get a bargain, remember that the best way to shop is to know what you need. Buying smarter means being smarter about your system. This takes analysis and planning—way before you thumb through the yellow pages or glance over newspaper ads. When you have a strategy in mind, then it's time to explore the many purchasing alternatives available to you in today's market.



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PERFORMANCE

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eople often regard simple filing programs as pale underachievers compared to high-performance relational data bases. But while brawny brainteasers like dBase, R:base, or Paradox garner the interest of many users, comparatively simple, "flat" file programs—those that offer the basics of data storage and retrieval—capture their loyalty.

The moniker "simple filer" shouldn't shape your perception of these programs' capabilities. While not as full-featured as so-called sophisticated data base managers, filers offer more capability in terms of data manipulation than most people realize. In fact, you

Charles Rubin is the author of the books the endless apple. Command performance: Appleworks and Appleworks from Microsoft Press.

might be wasting your money by buying a complex data base manager to

get features you assumed filers didn't have. In addition to being easy to learn and use, filers let you sort and analyze data, merge data with complementary programs for greater flexibility and create files large enough to handle almost any task.

Philip McKinnis runs the 20-room Black Bear Inn in Bolton Valley, Vermont. He uses PFS:File for all his data base needs, including a comprehensive room reservation and information request system. McKinnis bought two other PFS products, Report and Write, to use in conjunction with PFS:File.

"I looked at dBase II, WordStar and products like that when I was shopping for a system," McKinnis says, "but I thought they would take too much time

by Charles Rubin

to learn. I felt I could be up and running on the PFS products much more quickly. I knew it would also be easier to train my employees on the system once I'd developed it. I can train a person to handle inquiries in about five minutes, and within half an hour to an hour they can be very functional on reservation information as well."

cKinnis records reservations and information requests on a two-page data form with PFS:File. The form comprises fields for name, address, date, referral infor-

mation and type of inquiry (phone or mail). Once a guest makes a reservation, McKinnis records the guest's arrival and departure dates, the type of lodging package, the amount of deposit and form of payment, and the credit card type and number. When a guest checks out, McKinnis fills in fields for the total price of the room, food, gratuity, and room and meals taxes.

"I wanted to put as much information into one file as possible," McKinnis says, "so I'd have a lot of flexibility in sorting and analyzing one file's data." McKinnis's single-file system brings together all the information he needs on each guest. He opens a file when someone first requests information. "We make a new record and enter the name and address and referral information. We have a form letter in PFS: Write with information on the Inn, and we can merge the data in the new record with the form letter. We have a policy of sending out information on the same day it's requested, and this system lets us do that."

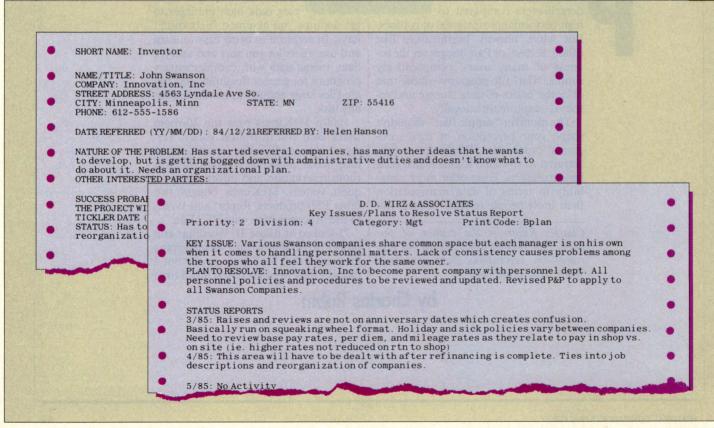
When a guest who previously requested information calls back to make a reservation, McKinnis recalls the appropriate record by the guest's last name and enters the reservation data. He merges the data in the reservation form with a reservation confirmation letter in PFS:Write and sends out the confirmation on the same day. In fact, merging the data in File with the automated information and confirmation letters, McKinnis has been able to eliminate a full-time secretarial position from his staff, because his clerks can handle the work on the computer.

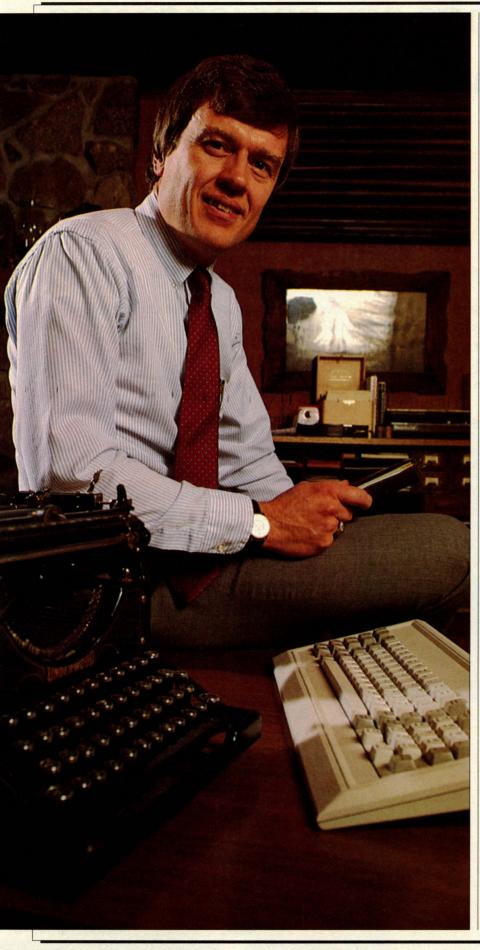
McKinnis uses the information he gathers to determine a relationship between advertising and occupancy rate. PFS:File limits searches to one key field, and McKinnis uses the guest's last name as the key. Using PFS:Report, which allows a sort by several fields, he can sort records by the source of the referral, the state where the guest lives, and the lodging plan in which he or she is interested (modified American, European, skiing packages and so forth).

With the referral information, for example, McKinnis's system tracks not



Dwight Wirz, a Minneapolis, Minn., management consultant, maintains a list of clients in one PFS: File file (above) and identifies key management problems, cites possible resolutions, and records his progress in a second file (lower). By using PFS:File's multiple-page record option, Wirz maintains status reports throughout a project.





only whether the referral was from a friend or an advertisement, but also the location of the advertisement. "I can compare bookings with the advertisement each guest was referred by on a daily, weekly or monthly basis," says McKinnis, "and decide whether or not to extend or cancel ads in papers like the *New York Times* or the *Boston Globe* as they're running." Since he now has two years' worth of records, McKinnis can look at his past occupancy rate and ad response patterns during his annual budgeting.

PFS:File and Report don't provide all the calculating flexibility McKinnis would like, so he circumvents these limitations by using PFS:Plan, File's companion spreadsheet, for certain types of analysis. For example, PFS:Report provides mathematical subtotals for fields other than the key field, but it won't calculate monthly subtotals for categories like food expenditures.

"If I want to look at food costs between January and March," McKinnis says, "I can use Report only to get a total for the whole period, not monthly totals." That's where Plan comes in. McKinnis merges the data in PFS:File with Plan. "I set up a budget spreadsheet with columns for each month and rows with names matching the field names in PFS:File, and the data transfers into Plan easily."

nother restriction with PFS:File is placement of computed fields (fields created by doing math calculations on two or more other fields) in the file. "I use computed fields to calculate things like total room revenue for a guest's stay," he says, "and with PFS:File, you have to put all the computed fields on the first page of the screen form. I would rather have the preliminary data—the referral information, arrival and departure dates and so on-on the first page and keep all the computed fields on the second page, but that isn't possible. The way it is, my people have to enter some of the information on the first page and then go to the second screen to enter more of the same kinds of information."

A more serious potential problem is sorting speed. "With File, [when] you're doing a sequential search on the last name key field," McKinnis says, "it can take about two minutes to sort through 2,000 records." Adding an Orchid Turbo card in his IBM PC reduced that sorting time to a minute, and McKinnis

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GUIDES								3.61					
A-1	3.00	7.00	3.00			4.00	15.00	7.00	11.00	11.00	17.00		78.00
ATG	-	-	-		-	-	-		- 1		1.00	-	1.00
B&B	- 1			-	_	-	-	-	-		1.00	-	1.00
BV85	2.00	5.00	24.00	4.00	_	-	-	-	-	-	-		35.00
CI-1			-		-			100	9.00	- //	-	_	9.00
ENCORE	_	2.00	-	_	_	2.00	2.00	_	_	_	2.00	-	8.00
EXXON		-	-			_		-	-	1.00	-		1.00
FODERS		_	-		_	2.00	_	2.00	-	-	1.00	-	5.00
GRCI	4.00	4.00	3.00	3.00	_	5.00	7.00	23.00	8.00	17.00	25.00	_	99.00
HII							-	1.00			1.00		2.00
INNSERV		_	1000	_	-1	_		2.00		-		-	2.00
MOBIL				2.00	_	3.00	2.00	10.00	5.00	3.00	2.00	-	27.00
NE85	3.00		_	_	_		_	6.00		_	_	_	9.00
OHRG	13.00	2.00	1.00	_	-	6.00		-	3.00	4.00		_	29.00
RCIONE					_	-		3.00	-	-	-		3.00
SMG84	-			_	_	_	3.00	-	_	_	_	_	3.00
VCI		-		-	-	3.00	5.00	9.00	8.00	5.00	-	-	30.00
VEG		_	-	-	_		_	-	_	1.00	_		1.00
VP-1	3.00	-	-		-	_	-	5.00	-	_		-	8.00
VTG84	19.00	1.00	2.00	8.00	-	_	_	_	-	<u>-</u>	3.00	-	33.00
VTG85	_		-	_	_	3.00	9.00	13.00	26.00	12.00	11.00	-	74.00
VTGTPG	-	-	-	-	-	2.00	-	-	-	40.00	-	-	42.00
TOTAL GUIDES	47.00	21.00	33.00	17.00		30.00	43.00	81.00	70.00	94.00	64.00	-	500.00

further minimizes the problem by splitting his reservation records into different files by season, one for summer/fall, which contains about 2,000 records, and another for winter/spring, which usually holds about 1,000 records.

ne final feature McKinnis misses in PFS:File is the ability to have the program automatically check for duplicate entries. "If we have two John Does who stay with us during a season, it would be nice if the program could check the address field to see if it was the same person, and display some sort of warning about it." As it is, he has to sort the file on the last name field and check visually for duplicates.

For his direct mailings, McKinnis keeps a separate name/address file of all previous guests. At the end of each season, he extracts the name and address information from the season's reservation tracking file, creates a new file identical to the master name/address file, and then merges the records from that into his existing name/address file.

All in all, McKinnis feels the system is fine for his needs, and doesn't foresee a time when he'll outgrow it. His hard disk has plenty of storage space, and the program can handle over 65,000 records in a file with enough disk space. Although McKinnis has to move some data into PFS:Plan for budget calculations, the process is simple enough that it doesn't bother him.

"I had several years' experience in the corporate world before I got into the hotel business," he says, "and [found that] designing a system with too many features was always a problem—it took too long, and by the time you were done, the people you were designing it for had left for other jobs. I learned that if you could get 90 percent of what you need without a lot of hassle, you should go for it, rather than spending a lot of time and energy going for that last 10 percent." That philosophy has paid off well at the Black Bear Inn.

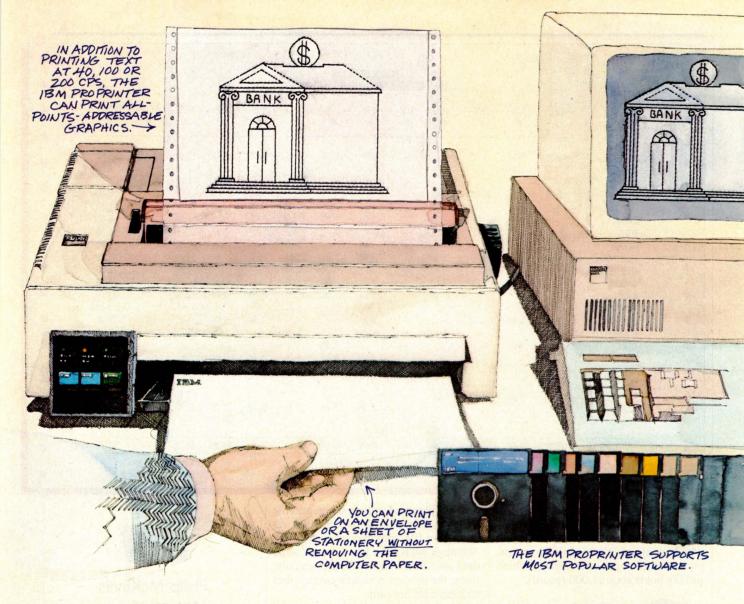
Another virtue of simple filing programs is that they often work in ways akin to the normal working patterns of their users. Dwight Wirz, an independent management consultant in Minneapolis, Minn., uses PFS:File and PFS: Report in his business, too, and though he's used sophisticated data bases in the past, he wanted a package whose operation was simple and sensible. "I knew I needed a file program, and I'd used Mail List Manager in a multiuser sys-



Philip McKinnis
uses PFS:File to record
reservation and referral information for
the Black Bear Inn in
Bolton Valley, Vt.
The printout above
details the number of
rooms rented through
travel guide referrals.

It combines monthly room-rental totals from PFS:File with PFS:Plan to get the overall totals.

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tem. I wanted something that was easy to use. I didn't want to be a slave to details. So far, PFS:File has given me

everything I need."

Wirz keeps one file of professional contacts and another of data related to his consulting jobs, targeting management areas in need of streamlining. "I keep a complete network of all my contacts on PFS:File. I have them organized by category: accountants, bankers, attorneys, business owners, other consultants and so on. I also have a code for whether they're an actual client or a prospect, plus marketing codes and a tickler date. The file is broken down in detail to match my marketing profile. I use it for mailing lists. I can generate a list just for banks, for example."

PFS:File may be limited to working with one set of files at a time, but Wirz's applications showcase PFS: File's formlike data-entry screens and its ability to store more than one page for each form in a record. "Part of what I do is break down a consulting project into manageable bites," says Wirz. "I identify key issues of a management problem, then list plans to resolve those issues. I break down a project by department or function, whether it's a management problem or an accounting problem."

Wirz sets up fields in a PFS:File record for different departments or issues. Once he gets the basic information in the file, he can sort it to isolate specific problems and plans to resolve them. "I can pull up one department's key issues when I have a meeting with that particular department," he says. "You can add pages to each record, so I can add monthly status reports for each issue.

When Should You Trade Up?

imple filing programs are easy to learn, and they store and retrieve data with considerable flexibility, but they may not offer all the power you'll ever need. At Pacific Bell in San Ramon, Calif., staff analyst Steve Mover spends a lot of time helping simple-file users upgrade to more powerful data base products.

"We need to put a lot of data in some kind of data base," Moyer says, "and the filing programs are a real easy way to

start. If you need to do repetitive filing, file programs tend to handle that very well-you can define a screen with multiple pages and put the data in.'

Mover says that some of the simplefile users at Pacific Bell never need to move up to a relational system because the volume or complexity of their datahandling needs never grows. For most users, however, their applications increase in sophistication fairly quickly. "It's an evolutionary process," Moyer says. "In many cases, people find they need more control over their data. The basic set of data required no longer meets their needs, or they need to relate information within the file, and they can't do that with a simple filing program. If somebody wants to know how

many times characteristics A, B and C show up in a set of data, that's hard to do with a filing program. In terms of recording information and doing basic reporting on it, that's less than satisfactory with a filing program."

Several other factors motivate users to upgrade. The first is file size. "When your [data] volume gets to the point where you handle a thousand or several thousand forms, record retrieval becomes difficult. It's slow, adding records to the file can be cumbersome, and the way information is stored isn't the most efficient. You're basically storing all the screen's blank space and field names [in every record]." Moyer points out that a filer with a screen form of perhaps 1,500 characters might contain only 200 or 300 characters of bona fide data.

Performance is another consideration, Moyer says. "You may spend half an hour going through your data base looking for a record, because most of the retrieval capabilities of a filing program are on a per-record basis—you ask for all the records with a certain area code, for example, and you can pull those records up on the screen one at a time, but it's not a comparative thing." You could, for example, sort a simple file for all records with an area code of 415, and then you might have to compare the ratio of 415 records to 408 records manually. A data base program could make such comparisons automatically in one sort.

Another advantage of data base programs versus filers is the report capabilities. A filer stores one record on each

line in the file, and you're limited in what you see on the screen-you see only a portion of the record. "If a record contains 200 characters, but your screen or printer will display only 80 characters on a line," Moyer says, "all the characters beyond the printing limit of your screen or printer are not displayed or printed, because there's no wrapping capability in the program. If you need to see an entire record with a filing program, you have to print one record on each page. It takes about a minute to print a page on a dot matrix printer, so if you have 200 records in a file, it will take about 200 minutes to print all those pages. With a data base program, you can print records in oneline format in a report, and if there's

more data in a record than will fit on one printed line, the extra data is wrapped to a second line and printed.'

"Another area would be sorting," Moyer continues. "Let's say you're sorting by area code, ZIP code, accounting code and name. Most filing programs have a limit of two or three sort fields. They also sort exactly as something is entered. If somebody enters a phone number as 4155558306, and somebody else enters it as 415-555-8306, they would sort differently. You have to have strong data-entry requirements for consistency, but a filing program won't do anything for you. With a data base program, you can specify that an area code entry is automatically formatted in a certain way, and ask the program to validate the entry by checking for a number of digits."

While introducing users to data management basics quickly, filing programs also show them what they're missing. If you know enough to know what you're missing, chances are you're ready to leave your filer behind.

-C.R.



Users upgrade from filers to link files, increase file size, speed retrieval, or maximize reporting flexibility.

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It's a means of generating source data, and then organizing it by subject or department. If the problem had something to do with engineering marketing, for example, I could pull up all the files relating to the engineering department and to marketing. I could then take all that data and look at it like note cards, or organize it into a report.

"I may have gathered all this information over a three-month period, but I code it so I can bring it all together to write management strategies. I can also change the form-I can pull all my data elements out and then go back and change the form without having to reenter the data. You can't do that with most

other programs."

Wirz maintains separate files for about 60 clients. PFS: File's file size limit is related to disk space, but Wirz isn't worried about reaching the program's limits in this area. "I've got a 10megabyte hard disk, and the program will store up to 100 different items per page. I don't see my needs going beyond that. I expected there would be a limit to the record size, and there may be, but I haven't hit it yet."

David Kray manages a companywide computer network for General Dynamics of Saint Louis, Mo., and having worked with computers for 15 years, he's well acquainted with heavy-duty data base products like dBase III and R:base 5000. Nevertheless, he chooses Microsoft File for his Macintosh when he needs to work with a data base.

Kray uses Microsoft File to determine the needs of General Dynamics' electronic mail network. He sends queries out over a mainframe electronic mail system for the number of users different departments want to add to the E-mail network in the coming year. He then pulls the responses into Microsoft File.

"Evaluating data bases both for my own use and for the professional working environment here," says Kray, "I looked at a lot of different products, starting with dBase III. After looking for a couple of years, it seems to me that the real requirement isn't for a sophisticated relational data base, but that most of our requirements are met with a flat file program—a simple and straightforward way of reorganizing, arranging and querying data that seems to be satisfied quite nicely with Microsoft File."

Kray uses the Macintosh Clipboard to move data from Microsoft File to other Microsoft products when he prepares reports, and he recommends the program to others as having an appropriate level of functionality for recording and analyzing most data bases. "It's

Filers offer ease of use as a major advantage, without compromising data manipulation capability.

a good fit, with the set of tools a person would need," he says. "What I've experienced with dBase III and R:base 5000 is that they're quite sophisticated, and that they're aimed at supporting a rather large data base-one that's fairly complex. Ease of use is very important. I could train somebody to use File in an hour or two," Kray says. "To teach somebody the full range of fundamentals for dBase III, you're looking at a day or a day and a half.

"dBase III and R:base 5000 do have their quick-start tutorials, but to learn all the fundamentals of a program so somebody could apply it flexibly as a data management tool takes a long time. A person in a management position who needs to get information three or four times a week should be able to do that without becoming a computer professional."

Most of the professionals Kray advises don't sit at a computer all day every day. The simplicity of a program like Microsoft File means they don't have much to forget between sessions. "We know of too many cases where a person travels for a week or goes on vacation, and the first thing he does when he gets back is pick up the MS-DOS manual. We find with the Macintosh and Microsoft File that he can come back and start working again immediately."

Microsoft File can handle more than 65,000 records in one file, depending on the amount of disk space available. But Kray doesn't see file size as a significant issue. "If we're talking about professionals dealing with information—and the information is defined as something that's been summarized—there's only a certain amount of timely information; the rest of it is historical. You're talking in the 200- to 500-record range—that's really the maximum of what you'd see a professional or a manager involved with. Beyond that, you're talking about a large data base operation.

Kray finds the performance of a simpler product superior to a complex program in some important areas. "One of the keys I look at is how easily can you read information into a data base from an ASCII file. You run into doublequote delimiters, comma delimiters and so on. R:base and dBase III have finally reached the point where they do facilitate importing information automatically, but most data bases have been geared to manual data entry or at least manual maintenance of the data, rather than importing it from other sources. With Microsoft File, I go in and copy information off the screen from MacTerminal, and use the Copy Table option to copy tabular information—it inserts a tab between each column of data. You can copy that information into Excel or File and you're off and running."

Microsoft File also works as a single, cohesive package rather than as a series of modules, making it simple to use, Kray says. "With Microsoft File, it doesn't make any difference whether you format or sort or report or find something. It's all done in a direct way-that's beneficial. You don't have to think, 'I'm in the report writer' or 'I'm going to do a query now.'

While Kray sees ease of use as Microsoft File's major advantage, he doesn't feel that he gives up much in the way of functionality. "There aren't a lot of restrictions on the file size," he says. "I've got one file with 2,100 records with 18 fields in it, and I can ask a question of that file and get a response back quite rapidly, compared to what I've seen. I can select some records and then move them into another environment like Microsoft Chart or Excel."

And what about complex data manipulation? "If it's contained within a file, I haven't found a lot you can't do with Microsoft File. I don't know what the upper limit of the sort fields is-I've never bothered to look-but I've sorted four or five fields and never had a problem.

Whatever the tool, be it a pencil, calculator, or personal computer, its value relates directly to the ease with which it can be used. Real productivity-the kind people gain when a tool is so transparent that they can focus entirely on their work rather than the means of doing it—is hard won. With simple filers, most users quickly find a path to real productivity, and getting something done-rather than having the most sophisticated program on the block-is what computing is all about.



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Inside The Box

Expanding your personal computer yourself can save time and money—provided you take the proper precautions and follow some basic rules of thumb. by Christopher O'Malley

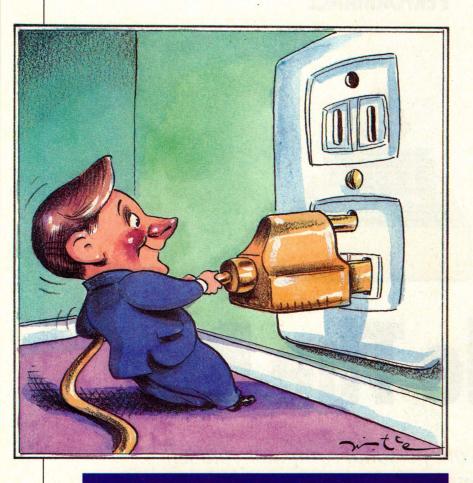
o it yourself. Well, why not? There's plenty you can do, and are encouraged to do, under the hood of most personal computers. Soldering wires? No. But you can easily add expansion boards, memory chips or disk drives. And doing it yourself is faster, cheaper and more satisfying than having someone else do the job for you.

Why add anything to the inside of your personal computer? Because the addition of circuit cards, chips and disk drives enables you to run more programs and run them faster, store more data, sharpen the display and communicate with other computers . . . among

quite a number of other benefits.

Before you belly up to the box, however, consider this: Forging ahead aimlessly can result in a lot of wasted time and effort, and reckless tinkering can send individual components—even the computer itself—to the repair shop. And that may cost you more than money. But fortunately, expanding your computer system safely and expediently is not difficult, if you follow some basic guidelines.

What makes tinkering inside your personal computer possible is the "open architecture" approach popularized by the Apple II and perpetuated by the IIe, the IBM PC and their compatibles. These open systems have removable



TURN OFF THE JUICE Before you tackle any task inside the box, unplug the power cord to prevent damaging electrical components.

lids, beneath which are slots for plugging in circuit cards, sockets for pushing in memory or co-processor chips, and—sometimes—space for sliding in disk drives. IBM-standard machines grow more adaptable with each new model; the IBM AT-class computers sport eight to 10 expansion slots and room for at least three disk drives.

Of course, not every personal computer has been styled to fit the open, or self-advancement, architectural movement. Some popular personal computers, like the Apple IIc and the Macintosh, are closed for business when it comes to internal expansion. For the most part, so are flashy newcomers like Commodore's Amiga and Atari's 520ST. There are a few internal expansion options—memory upgrades and hard disks among them—for closed systems like the Macintosh and Apple IIc. But, generally, these should be installed by a dealer or quali-

fied technician. Should you proceed otherwise with a sealed box, be aware that you risk voiding your computer's warranty and damaging your machine.

f you have an open-system personal computer, a few preliminary preparations can help you avoid many of the pitfalls associated with the adding of internal hardware components. You can save yourself a considerable amount of aggravation by straightening up your work area before opening your computer. Clear sufficient room, keeping in mind that you have to dismantle the entire system (monitor, cover, keyboard, etc.) to get inside the box. And don't underestimate how long it takes to divest a computer of its parts, add a component, and reassemble the system. Thumbing through the add-on hardware's instruction manual should give you a feel for the complexity of the

operation. For the most straightforward procedures—plugging in circuit boards, for example—allot at least an hour. Allow twice that for adding memory chips, still more for disk drives.

Before tackling any expansion chore, turn off the juice. There is no imminent danger to your health, but the computer's well-being depends on it. Electrical components can be short-circuited rather easily. Never add or remove anything from your system without first turning off the computer. Never! It's also a good idea to disconnect the power cable from the rear of the unit or from the wall outlet—just in case you accidently hit the power switch while working around the box. You don't have to disconnect all of the peripheral cables, unless you plan to remove the boards to which they're attached. It's a good idea to unplug them anyway, though, as these cables only serve to restrict the movement of your system box. What's more, a sharp blow to any of them can bend or break the connecting metal pins.

Removing the computer's cover should pose no special problems, since almost all hardware manuals illustrate the procedure adequately. (The cover snaps off an Apple IIe, for instance, and slides off an IBM PC.) What instruction manuals make little or no mention of is static electricity. Yet static electricity is your primary nemesis in any direct contact with circuitry. Ordinary amounts of static, accumulated in no more than a few footsteps in some offices and homes, can foil the entire operation by short-circuiting boards and chips or even the main system board. Dry air or carpeting (or both) are highly conducive to building an electric charge. The solution to the static problem, ultimately, is to alter your surroundings. If you're so inclined, a humidifier can take care of the dryness in the air, and there are carpet sprays and pads that help prevent the buildup of static under your feet.

If you have to work in a "charged" environment, make sure you discharge static electricity from your fingertips by touching a metal object before you handle add-on circuitry like boards or chips. The cover or rear of your computer will do that safely, as will a sheet of aluminum foil. There are fancier solutions, like decorative static touch pads, but anything that works is fine. You may have to "ground" yourself several times as you work, depending on how bad your environment is and how much you move around.

Once you've removed the cables, the cover and the static, you can go about

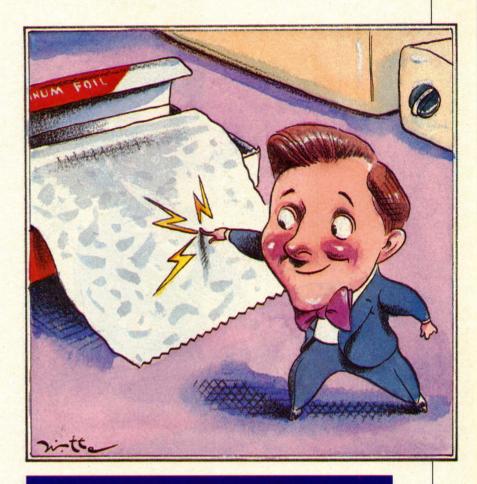
the task of adding hardware muscle inside the box. The most common, and easy to contend with, internal add-on is the plug-in circuit board. Circuit cards act as extensions of the computer's main system board, or motherboard. They slip into the expansion slots inside the computer. Circuit cards can provide more memory, a sharper video display, connections for peripherals, a modem, a hard disk drive and more.

ircuit boards are generally quite easy to install. An installation booklet always accompanies expansion cards, and it should be your primary resource for specific questions. But there are broader guidelines to be considered, many of which are omitted in manuals.

First, choose an open, or unused, expansion slot of the appropriate length. (Some computers, like the IBM PC/XT, have "short" slots that accommodate only half-size cards.) If you don't have an open slot, you will have to remove one of the cards already in place or buy an expansion box—if available—to handle more circuit boards. Most circuit boards can be plugged into any open expansion slot, but a few cards require that you use a specific slot (especially cards for the Apple IIe).

There is usually some preliminary configuration work to be done before you actually install the card. This is accomplished by setting a group of tiny switches on the card in the up or down position. These switches, sometimes called DIP switches, are typically found in groups of two to eight (switch blocks) and they enable you to control how certain features of a circuit board operate. Jumpers, small electrical bridges, are sometimes used for the same purpose. A memory expansion card, for example, may have switches that tell the circuit board how much memory you're adding and the type of memory chips (64kor 256k-byte) you're using. For an internal modem card, there will probably be a switch that tells the board which communications port (Com1 or Com2, say)

Often, there are switches on the motherboard as well. For changes or additions in video display, memory size and disk drive configuration, these motherboard switches may have to be reset. The installation instructions should alert you to the switch changes. If not, a service manual available through your dealer or from the manufacturer of your computer should answer any questions not answered by the installa-



GET RID OF STATIC the static electricity in your fingertips can short-circuit components. Aluminum foil removes the hazardous charge.

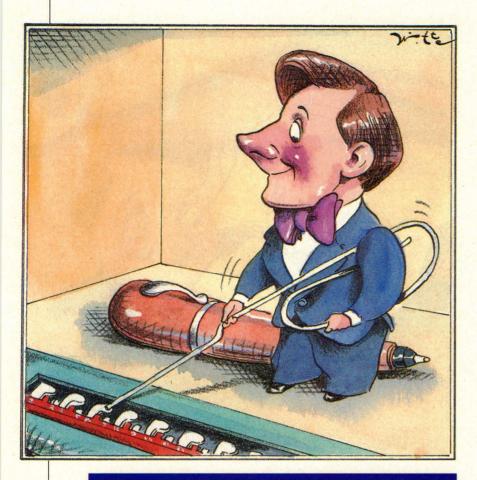
tion guide or your operations manual.

It's important that you set all the necessary switches and jumpers before you install a circuit board, as it is difficult and perhaps even dangerous to do so after the fact. If you have to change a switch setting after a board is installed, be sure to turn off the computer and remove the board first. Never set circuit switches—either on an expansion board or on a motherboard-from within a computer that is turned on. Also, set switches using a ballpoint pen or the end of a paper clip—not a pencil. The graphite in a pencil's lead point can flake off and easily short-circuit the switch when the computer is plugged in and turned back on.

Not unlike success in swinging a baseball bat, putting a circuit board in your computer requires that you have the proper grip. Here, the idea is to keep from bending, and breaking, delicate components that protrude from the board or (if you're not fully discharged) short-circuiting them. Hold circuit cards from the sides, carefully. Lower the card into the computer, using the support guide, if there is one. Align the card's connecting strip with the expansion slot and push down firmly, but evenly, from the top corners with fingers from both hands. Once the card is seated in the slot, screw the metal retaining bracket (on IBM-type machines) into the rear panel of the computer. This metal bracket anchors the circuit card and may serve as an electrical ground—so make sure it's fastened.

Once the expansion card is secure, you can connect any cables that are necessary. Usually, these cables are hitched to the board from the rear of the computer with tiny screws. In the case of a modem, you have to plug a telephone wire into the modular jack on the board

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THROW THE SWITCH Use the end of a paper clip or a ball-point pen to set tiny (DIP) switches on circuit boards. Do not use a pencil.

and then plug it into the wall jack.

Adding memory chips to your computer requires a steadier hand than does plugging in circuit cards. And there are more little-known "rules" to play by. But there is extra incentive for the extra effort: you can dramatically reduce the price of memory itself, as well as avoid installation costs. Buying memory chips and inserting them yourself is routinely two to three times less expensive than purchasing the same memory upgrade on a ready-to-go circuit card.

Computer memory, in the form of tiny memory chips, can be added either to expansion cards or (on IBM-types) to the motherboard itself. You can add memory chips wherever there are empty receptacles, or chip sockets. Also, you may be able to get more memory out of these sockets by removing 64k chips (with a tweezers or small screwdriver) and replacing them with 256k chips.

There is no soldering required, and no special tools are needed. Static electricity is particularly dangerous in this procedure, as memory chips can be short-circuited easily. So, make sure you're grounded before handling them.

emory chips, whether

64k or 256k, come in sets of nine—eight chips comprise the memory total while the ninth checks for accuracy, or parity. (Nine 64k chips, for example, equal 64k bytes of memory.) Consequently, the chip sockets on expansion cards and motherboards are arranged in columns of nine. Chips must be added in multiples of nine, column by column. A column of sockets, in other words, must be entirely full (nine chips) or entirely empty. What's more, you must fill these socket columns in

the prescribed order for it to work.

Chip types and speeds are important. You can use either 64k or 256k chips. but not a combination of the two on the same circuitry. However, you can sometimes have 64k chips on one board and 256k chips on another; or, say, 64k chips on the motherboard and 256k chips on a card. To be sure of the type, check the stamp on the face of the chip: 64k chips have a "64" as part of the label, as in a chip marked "TMS-4164." The same holds true for 256k chips. Memory chip speeds-measured in nanoseconds-are not so readily derived, but you should know what the speed is before you buy. You can mix chips of different speeds, but there is usually a minimum speed. Generally, chips that operate at 200 nanoseconds or faster are adequate.

If you've got the proper chips and empty sockets (and no static), you're ready to add memory. Make certain that the pins on the memory chip are straight; if not, bend them gently into place. Though these 16-pin chips will fit in the sockets in two ways, only one way is correct. There is a half-circle notch (or, less often, a dot) on one side of every chip. This must line up with a similar notch on the side of a chip socket. Once you've aligned the chip with its socket, carefully insert the chip's pins halfway into the socket, one side at a time. Check to see that all of the pins are in the socket before pushing the chip down fully into place with two fingers.

Chip pins bend and break easily, and all the pins must be inserted properly for added memory to be recognized by the computer. Mistakes here can be costly: you can usually buy replacement chips only in sets of nine. The best advice? Take your time. It should, and will, take you several tries to insert some chips.

Co-processor chips, although considerably larger than memory chips, plug in the same way. There is usually a socket on the motherboard of IBM-standard machines for a math co-processor to assist the main microprocessor with calculations. You need only make sure that the co-processor chip you buy is one designed for your microprocessor. The Intel 8087 co-processor serves as a partner to the Intel 8088 microprocessor in the IBM PC and compatibles, for example, while the 80287 should be mated with the 80286 in AT-class machines.

Remember, there are probably a few switches (on the motherboard or on a circuit card) to be set when adding memory or co-processor chips.

Adding internal disk and tape drives,

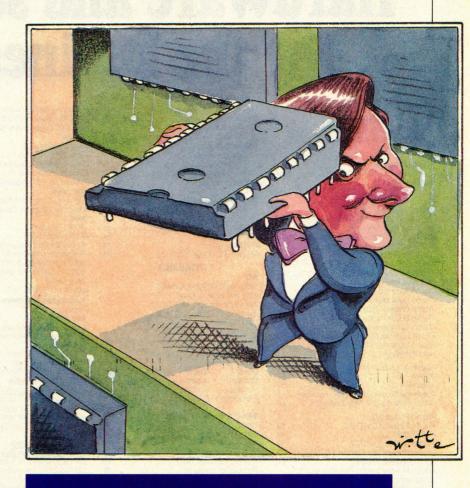
though not an option for Apple II users, is an increasingly tempting project for those with IBM-standard hardware. As drives have evolved to less than half their former size, and computers have allotted more room for them, adding internal drives has become a do-ityourself option. The appeal of a disk drive, naturally, is increased storage, and hard disks speed things up considerably. A tape backup drive can provide an extra measure of data security. There are external hard disk drives and tape backup units, but tucking these capabilities inside the box saves desk space and, usually, money.

he procedure for installing a drive in your computer, assuming you have room for one, is very much dependent upon the specifics of the addon drive and the computer itself. (You can remove one drive and add another, but such an endeavor may prove too technical for many people.) Typically, you'll have to remove the face plate covering the drive area, slide the drive into an internal chassis, secure it there, plug in a controller card, and connect the two with a flat cable. You may have to cable the drive directly to the power supply, too. Some drive kits include the proper cabling and circuit card controller; other drives may require you to purchase these accessories separately. Some disk controllers can handle several drives, so you may need only the connecting cable.

Once the drive is installed, you may have to set switches on the motherboard and the controller card for the computer to recognize the added drive. You may also have to run special setup or diagnostic software before the drive will work properly.

If a hard disk is what you're after, and the traditional regimen for adding drives sounds a bit too technical, then look into the new hard-disk-on-a-card products. These miniaturized drives snap in as easily as any other circuit board, yet they provide the same 10 to 20Mb of storage space as many of their larger counterparts. And there are no cables or controller cards to deal with.

Regardless of what it is you've added, or why you've added it, be sure to test it thoroughly before entrusting valuable work to your computer again. Incorrect switch settings, bad chips, and loose connections are among the leftover troubles you could experience. Some components come with diagnostic programs of their own; use that software as instructed and then check things out



EXAMINE THE CHIPS Before you install a memory or co-processor chip, be sure that its pins are straight. If not, bend them gently into place.

further with the diagnostic software that comes with your computer. Even with those assurances behind you, it's a good idea to give your newly expanded computer a trial run before resuming any important work.

There are a few potentially serious problems you may encounter after your additions are complete. Electrical conflicts and overload, though rare, are two such problems. Conflicts between circuit boards are infrequent, but they can happen. The problem: there are a limited number of electrical paths-called input-output (I/O) ports—stretching between the expansion slots and the microprocessor, and an I/O port cannot be shared. If two boards look for the same port, there is a conflict. Unless the computer or the circuit card allows you to change the I/O ports being used (which they usually do not), one card will have to be removed.

Electrical overload, or power supply failure, is also an infrequent occurrence, but if your computer is fully loaded with additions it is a possibility. Circuit boards, chips and disk drives all draw their electrical lifeblood from the power supply. The power supply in IBM PCs and many compatible machines, particularly portables, is relatively modest at 7 amperes or less. That may not be enough power to drive all the options you can fit in the box. (You can total the amps yourself with the proper technical information, or have a dealer do it for you.) The no-compromise remedy is to have a computer dealer replace your power supply with a healthier model, like the 15-amp unit in the IBM PC/XT.

But the rewards of expanding your system far outweigh the possible perils. And doing the job yourself keeps your "down time" down, your wallet wider, and your computing truly personal.

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-P341	parallel printer (136 column)	\$749.
P351	printer (136 column) w/serial and	
parall	lel interfaces	1129.

DRIVES

All floppy drives are completely pre-tested and are supplied with a printout of the test results. They are shipped with complete step-by-step installation instructions. Drives are 320k/360k.

Control Data (CDC)	
(51/4") half-height drive (DS,DD)	79.
IOMEGA	
Bernoulli Box 20 Meg w/PC2 card 20	349.
·10 Meg cartridge	48.
Bernoulli Box 40 Meg w/PC2 card	call
20 Meg cartridge	67.
Mountain Computers	
Drive Card 20 Meg	call
Seagate	
20 Meg Internal Hard Drive (w/controller,	
cables, and manual)	469.
Tandon	
TM 100-2 (51/4") full-height drive (DS,DD)	95.
TEAC	
FD-55B (51/4") half-height drive (DS,DD)	97.
Toshiba	
AT 360k Drive (51/4") half-height drive	99.
MEMORY	
WEWORT	

64k Memory Upgrade Set for IBM-PC or	XT
system board or any memory board	
150 nanosecond (set of 9)	15.
200 nanosecond (set of 9)	
Install memory upgrades & run diagnostic	CS
at time of board purchase only	10.
128k Memory Upgrade Set for IBM-AT	
System Board (9 chips piggybacked)	39.
-256k Memory Upgrade Set for any	
IBM-AT memory board (9 chips)	39.
THE RESIDENCE OF THE PARTY OF T	

DISKS DS/DD Disks for the PC & XT (40 TPI)

Maxell MD-2 Verbatim Datalife	
DS/High Density Disks for the AT (96 TF 10 disks per box.	1).
Fuji	35.
MaxellVerbatim	45.
Flip Sort (holds 75 disks)	15.

OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for charge cards.
 Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that
- No sales tax.
- All shipments insured; no additional charge.
- Allow 1 week for personal and company checks to clear.
- UPS Next-Day-Air available.
- COD max. \$1000. Cash or certified check.
- 120 day limited guarantee on all products.*
 To order, call us anytime Monday thru Friday 9:00 to 9:00, or Saturday 9:00 to 5:30.
 You can call our business offices at 603/446-3383 Monday thru Friday 9:00 to

1-800/243-8088



PC Connection 6 Mill Street Marlow, NH 03456 603/446-3383



Samaram



They're hot and in stock!

We've tried out Lightning and it's everything the reviews have indicated. See PC Magazine (12/10). And Borland is also now selling Analytica's Reflex database for

80% off the original price. We have a gargantuan inventory of Borland products.

Lightning										¢	-
Reflex										S	J

New Borland! The systems to end all systems!



We've put together two unbeatable systems featuring our favorite compatible—the PC Designs FD 1000, the micro that PC Week called "a terrific machine at a terrific price" (5/10). We are the exclusive mail order distributor for the FD 1000. Read the fine print, then call one of our consultants for details. 1 Year Warranty on both systems.

Monochrome Package All of the above with a
Princeton Max-12E (amber) monitor
Color Package All of the above with a Princeton
HX-12 (color RGB) monitor

\$1699

\$1399

- USA-made motherboard with 256K
- upgradeable to 1 Meg 2 serial ports, parallel port, clock/calendar
- drive controller for 4 drives - 4.77 MHz or 8 MHz clock
- Keytronic KB5151 Deluxe Keyboard
- 2 CDC 1/2 height floppy drives
- A complete system
 Cables for 1 serial port and two drives
- 135W power supply
- IBM PC lookalike chassis
- RAM drive software



Note: AT versions are also available.

EMS BOARDS

These are the boards that let you add up to 2 Meg. (per board) of RAM. They all support the Lotus/Intel Expanded Memory Specification (EMS), and software written to that standard (1-2-3 Release 2, Symphony 1.1, SuperCalc 3 and others).

Orchid Conquest	a
(0k-2Meg.; serial port; parallel port; clock/calendar; PCnet	
interface; Disk Caching, RAM Disk, & Print Spooling software)	
AST RAMpage!	a
(256k-2Meg.; SuperPak software; 1 year warranty)	7
Intel Above Board	al
(64k-2Meg.; RAMdisk & print buffer software; 5 year warranty)	

Amdek Monitors

BERNOULLI BOX!

The widely acclaimed 20 Meg Bernoulli Box external hard drive, featuring two 1/2 height 10 Meg drives with removable cartridges. Now smaller, lighter, and almost \$150 less expensive! We're an authorized Bernoulli service center.

Bernoulli Box 20 Meg	.\$2349
Additional 10 Meg cartridges	
Head Cleaning Kit	\$79



Hard Drives



Our internal hard drive systems are complete packages-they come with cables, a Western Digital

Controller Board, and manual. Fully compatible with DOS 2.x and 3.x. 1 YEAR WARRANTY.

10 Meg Internal Packages . . \$369 20 Meg Internal Packages . . \$469 (Note: we also have a 20 Meg internal hard drive for the AT, complete with all mounting hardware for \$569)

Disks (10 per box) IBM-PC Disks (DS/DD) Verbatim DataLife \$19 IBM-AT disks (96-TPI) Verbatim DataLife

Video

Alliuck Mollitols	
300G (green)	\$129
300A (amber)	
310A (amber)	
600 (color RGB)	
Princeton Monitors	
Max-12E (amber)	\$179
HX-12 (color RGB)	6449
GRAPHIC CARDS	
Hercules Mono (parallel port)	\$299
Hercules Color (parallel port)	\$169
Paradise Color/Mono (parallel port)	\$149

Modems

From Hayes—the leading manufacturer of microcomputer modems.

Smartmodem 1200B (w/Smartcom II)	49
Smartmodem 1200	389
Smartmodem 2400	5579
Curtis' Smartmodem-to-IBM Cable	\$17

Memory

These are fully tested, factory fresh, 9-chip sets from the leading chip manufacturers, such as TI, NEC, Hitachi, Oki, etc. Easy to install. Complete instructions. 1 Year Warranty.

64k (200Ns)	\$12	ea. set
64k (150Ns)		\$15 ea. se
128k or 256k		\$39 ea. se

Floppy Drives

All drives are double-sided, doubledensity and are pretested and shipped with the test results. Free mounting bracket when you buy two half-heights.

DRIVES WITH 1 YEAR	WARRANTY
Control Data (CDC) 9428 half-height	\$79
TEAC FD 55B half-height	

DRIVE WITH 120 DAY WARRANTY Tandon TM 100-2 full-height....\$95

Tip Sheet



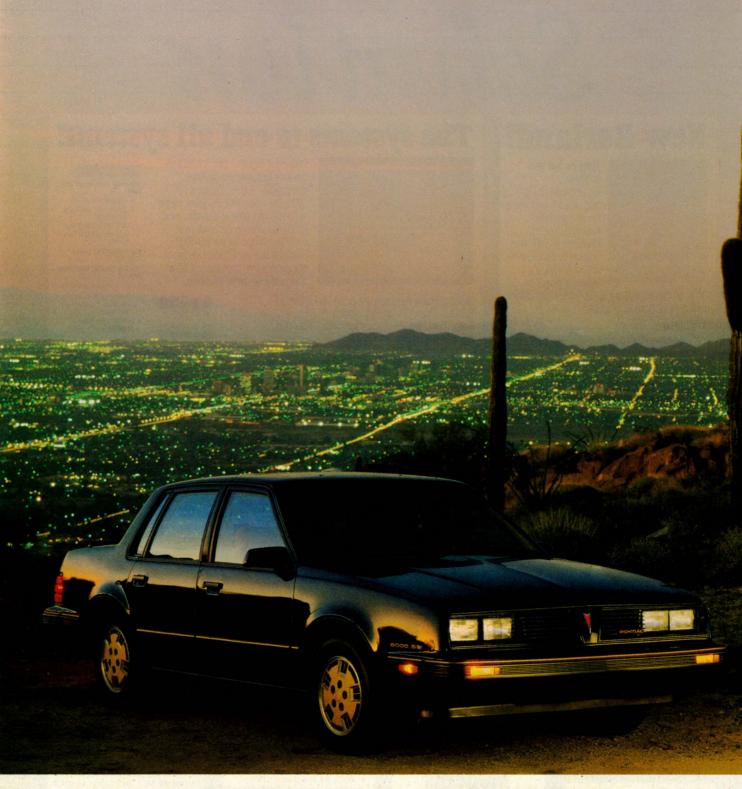
Name: Chris Lowe Title: Sales Consultant Age: "Old enough to know better.

Biggest Challenge: Finding someone to go winter scuba diving.

"The resolution you get on your color monitor depends on three things: your monitor, your video card, and the program you're using. Whichever one offers the lowest resolution determines what you'll get. For example, a monitor with 640 x 200 resolution, running off a video card that only supports 320 x 200, will only deliver 320 x 200. The point is that it doesn't matter how much money you spend on a high resolution monitor if your programs and your video card don't support that higher resolution."

"We want the products you buy to do what you want them to do. That's why we spend so much of our time answering questions and giving advice. So call us before your next purchase.

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Besides 2.8 liters of high-output V6 power, our legendary suspension and blacked-out trim, you also get cast aluminum wheels with big Goodyear Eagle GTs, complete analog instrumentation and bucket seats. The new Pontiac 6000 S/E, sedan or wagon. Pontiac dealers are standing by to take your order...

PONTIAC 6000 SE WE BUILD EXCITEMENT



PRODUCTIVITY

STEPPING UP TO A SERVICE OF STEPPING UP TO A SERVICE OF SERVICE OF

Hitching a word processor to a laser printer can make your documents look typeset. But programs vary as to what they can do.

by Lamont Wood

he advantage of printing with a laser may not hit home until you see fully formed headlines, real italics and proportionally spaced characters on a colleague's proposal, in sharp contrast to your own gray dot matrix draft. Why handicap your ideas before they even get read? It's time to get your word processing up to speed with a laser, you tell yourself.

With the advent of desktop laser printers, the average manager who needs to communicate in writing can now present near typeset quality in each memo or report he or she turns out. Laser output gets noticed. Laser printers are faster than other printers (their

output is measured in pages per minute instead of characters per second) and, unlike impact printers, they are refreshingly quiet.

So, you're ready to put a muzzle on that vintage rat-tat-tat and plug in a laser? Well, not so fast. First, you'll probably have to reconfigure your system disk to send printer data out through the computer's serial port instead of the usual parallel port. Next, you're likely to need a font cartridge that makes your laser more than a daisywheel equivalent. Finally, unless you're a master of arcane printer codes, you'll need software that addresses the font

Lamont Wood is a free-lance writer based in San Antonio, Texas.

PERSONAL COMPUTING/APRIL 1986 87

styles and sizes you want to use. As you'll see, some word processors do a better job exploiting all of a laser's features than others.

Ron Silveira, manager of printer planning in the Information Organization of Pacific Bell in San Francisco, explains "Even here, inside a technical organization, I run into people who think a laser printer is something you can take home from the computer store, plug in and use. I have to caution them—very strongly—that this is not the case." Silveira acts as a consultant for those in the company who want to buy hardware.

The trouble is that laser printers are where personal computers were about five years ago: No one standard has yet emerged. A half-dozen Japanese companies are manufacturing different engines-the printer mechanism-and a larger number of original equipment manufacturers, mainly American, are adding controller boards and marketing the products. The industry has yet to settle on a single protocol that could make all word processors and lasers work together. Another question is where to put these instructions-into ROM built into the printer or into software that can be downloaded from the computer? These are issues that should work themselves out as the market matures. Meantime, technicians at all the major software publishing houses are racing to keep printer utility disks up to date so that when you install your word processor or decide to reinstall it for a laser, there will be a driver you can use.

s 1986 began, the Hewlett-Packard LaserJet led in the number of laser printers sitting on the desks of IBM-compatible computer owners, while the Apple LaserWriter had the inside track with Macintosh mavens. HP's early lead has, in effect, set the standard to which many word processing companies are writing drivers. However, HP is facing stiff competition from other laser makers, who may choose to emulate HP's codes or do something different.

Both the LaserJet and LaserWriter are based on the same printer engine made by Canon, but the instruction sets used to make them perform are entirely different. There are more than a score of resellers using the Canon engine, from daisywheel emulators to expensive, graphics-oriented, in-house publishing systems. While you need programs running on an Apple Macintosh to fully ex-

ploit the LaserWriter, just about all full-featured word processing programs made for the IBM-compatible world have added printer drivers that can access at least one font cartridge of the HP LaserJet.

Hewlett-Packard, by the way, has also introduced the LaserJet+ at a suggested retail price of \$3,995, which is \$1,000 more than its standard LaserJet (dubbed "LaserJet Classic" by company officials). For text purposes, including headlines and the ability to draw horizontal and vertical lines (to box text or create organizational charts, for instance), you don't need to spend the extra money on the LaserJet+. The more expensive model is meant for users who need to print drawings at a higher resolution or want to download fonts from a computer disk rather than relying solely on the cartridges.

The LaserJet comes with one default font built in-typewriter-like Courier. You get daisywheel quality output; but without buying a plug-in font cartridge, you will not be able to use a different typeface, print headlines or output italicized or proportionally spaced text. (The latter feature allocates just as much space as a character needs instead of the equal measure an "i" and "w" get from a typewriter.) Fonts are installed by inserting ROM cartridges. There are more than 20 cartridges available, with three to eight fonts on each. A different size, such as 8-point type, counts as a separate font.

Without the right word processing software or add-on program, fonts must be invoked with lengthy escape codes, specifying orientation (normal or sideways), symbol set (Roman or ASCII), spacing (fixed or proportional), pitch (characters per inch), point size (there are 72 points to an inch, with 10 or 12 points being popular for text), style (upright or italics), stroke weight (bold, medium or light) and typeface (Helvetica, Times-Roman, etc.). Most users can't be bothered learning about escape codes, and that is why word processing companies themselves and printer driver publishers are coming to the rescue with easier-to-use utilities.

Because the LaserJet connects through the serial port, the first thing you need to do is reconfigure your word processor's AUTOEXEC.BAT file so that the computer redirects output meant for the laser printer through its serial port. This is accomplished by adding the following two command lines:

MODE COM1:9600,N,8,1,P MODE LPT1:=COM1

Press the Ctrl, Alt and Del keys simulta-

neously to reboot DOS so that this new information can load. The LaserJet+optionally comes with a parallel interface. You won't necessarily have to reconfigure your system disk or AUTOEXEC.BAT file if you opt for the parallel interface.

Virtually all word processing programs warn against trying to print on the top and bottom half-inch of the page when using a laser printer. Therefore, you might want to reset your top and bottom page margins. At Peerless Software in San Antonio, Texas, for example, technical support vice-president Don Emery says that to make their EMIS telemarketing software work with the LaserJet, they had to be very careful about the top and bottom margins, since straying into the margins caused the printer to generate a formfeed command, with the end result that a blank sheet was ejected between each page.

he LaserWriter is designed for use with the Apple Macintosh, connected through its AppleTalk network port and using the PostScript typesetting language from Adobe Systems of Palo Alto, Calif., to reproduce whatever is on the Mac's screen (but without the jagged edges). Four specially designed fonts come with the printer installation disk that you can transfer to your startup system disk-Times, Helvetica, Courier, and Symbol (math). You can use other Mac fonts, but Apple recommends these four for best results. Depending on how much disk space you want to use, you can load one size and change its scale to get different type sizes, or load multiple sizes (which will look better). Apple's new LaserWriter Plus offers additional fonts.

If you don't have a Macintosh, the LaserWriter can be connected through its serial port and set in "Special" mode. Then it emulates a Diablo 630 daisywheel printer, minus the Diablo's extended character set. However, there's

The LaserJet produced the documents (upper left and lower left), MathPlan generated the bar graph in the memo (bottom right), and the combined file was printed with the LaserJet +. The note (upper right) came off a LaserWriter.

Bradford, Bastian & Brown Attorneys and Counselors at Law 100 East 200 North Street Post Office Box 62778 Provo, Utah 84603

Area Code: 801 Telephone: 379-6345 Our File No.

February 28, 1985

Dear Mr. Vanderberg,

This is a sample printout from the HP LaserJet printer, using WordPerfect, that demonstrates a letterhead. Since the letterhead information is kept in a primary merge file, to print the letterhead on the first page of a document, you simply do a merge. You specify as the primary file the file which has your letterhead, and when saked for the secondary file, press the Eater key, signifying input from the keyboard. This allows you to enter variable information in the letterhead, such as a file number and date as demonstrated in this example. When prompted for information during the merge, you type the data followed by a Merge R (F9).

This document was created using normal WordPerfect formatting functions. It was printed with the LaserJet-B definition and the Times Roman fonts with the top line in Helvetica Bold. The Advance to Line # function (Shift-FI) was used to combine the middle section in 6 lines per inch. and the side sections in 8 lines per inch. The middle section was centered between the margins, and the right section in condensed print was centered on column 87. The document was printed in 13* pitch in proportional spacing with margins set 13 and 97 for one inch right and left.

We feel that this is a very attractive method for printing and maintaining you letterhead. You can use the same paper stock for both letterhead sheets and subsequent pages, and when the need arises, the letterhead can be changed quickly, without a need to wait for time-consuming and costly arrangements with a printing company WordPerfect and the Lasezfet printer are an extremely effective and productive combination for business, education and personal word processing and correspondence.

Best Regards.

J. Daron Bradford

Notes to Consolidated Financial Statements

Summary of Accounting Policies

Basis of Presentation

Apple's fiscal year ends on the last Friday in September

Service Parts

Property, plant and equipment are stated at cost. Depreciation and amortization are computed principally by use of declining balance methods over the estimated useful lives of the assets.

Earnings Per Share

(In thousands)	1984	1983
Raw materials and purchased parts	\$ 88,868	\$44,488
Work-in-process (inc. materials held by		
subcontractors)	48,550	28,069
Finished goods	127,201	69,900
Total	\$264 610	\$149 A57

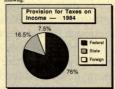
Created using Word, Chart, and Plan, from MicroSoft, MacDraw from Apple and printed on the LaserWriter.

Borrowing Arrangements

Apple has short-term unsecured credit facilities with domestic and foreign banks totalling \$125 million. There is no compensating balance requirements or fees associated facilities and hely are cancellable at any time by either the banks or Apple. There were no borrowiness against these credit facilities as 6 persenber 28,

Taxes on Income

The provisions for taxes on income consist of the following:



Included in prepaid income taxes are prepaid taxes relation such timing differences of \$26,751,000 and \$12,061,00 in 1984 and 1983, respectively. The sources of the differences and the tax effect of each amount are compute by applying the statutory federal income tax rate income before taxes.

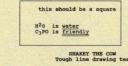
The DISC (Domestic International Sales Corporation benefit shown on the following page is attributable to reversal of deferred taxes previously provided on Dearnings accumulated through September 28, 1949 accordance with the Tax Reform Act of 1984, and has irreflected as a reduction in the provision for taxes in fourth quarter of fiscal 1984.

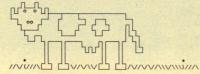
WordPerfect

This sentence is written in 10 pitch. This sentence is written in 14.4 point.

You can print you in a variety of styles, in a variety of styles, including italics match to a style of the s

You can put your type in newspaper columns, which makes you your own publisher! Do company newsletters, professional looking user instruction manuals, and more.
You can use line drawing to map organizational charts or have a little fun!





ENGLISH

!@#\$% &*()_+QWERTYUIOP()ASDFGHJKL:"-\ZXCVBNM<>? 1234567890-=qwertyuiop[]asdfghjkl:"\zxcvbnm../

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Microsoft Word

Inter-Office Memo

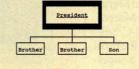
YEARLY REPORT

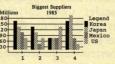
1985 was a banner year for Computer Stuff & Things, Inc. Profits from our wholly owned subsidiary, Cables International, outstripped that of the parent company. Some of the year's highlights are illuminated below.

The industry took a hard hit from our sort-of-soft disk drive technology. The first three months of the year we saturated the media with testimonials from users who were exentic about test of the state of the state of the state of the test of our disk (they sail father than any other disk of comparable capacity, and are not bothered by crossilia winds). Arthur M. Bytzs, the chief inventor and proponent of the semi-rigid soft technology, was recognized for his rigid soft technology, was recognized for his proposed to the state of the state of the state of the Recreation in Computing.

Company Growth

Although the president prefers to keep a tight rein on the company, additional outside management was brought in. The chart below reveals the new, modern administration.





Foreign & Mathematical Characters

We softened the international tensions caused by the already mentioned reduction in imported products by bringing in some of the foremost scientific minds from around the foremost scientific minds from the revolution. Here are a few words from them: el tamaño graddatria, grônask hjætp, æblegred, Fußball, adequate, balnagt

 $x = (1 - \frac{v^2}{c^2})^{-\frac{1}{2}} (x - \beta t)$; $m - m_* = \frac{E}{c^2}$: $E = mc^2$

1985 was the year which saw Computer Stuff & Things, Inc. bring forward the most advanced oducts in the PC world. Your computer disks no longer need serve just one purpose. Spend the oraning pumping data and the afternoon playing 'frizbee' with your associates.

WordPerfect

Samna+

an additional complication: The Laser-Writer requires an X-on/X-off protocol for "handshaking."

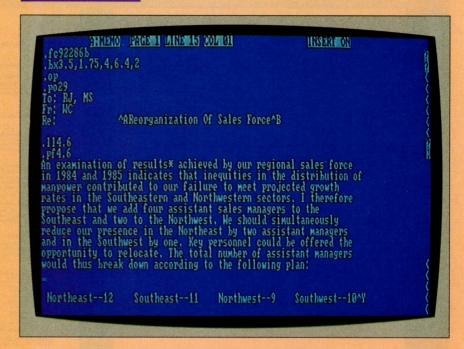
This arrangement is necessary to cut off the flow of data from the computer while the printer digests one batch at a time. Most personal computer printers use a parallel interface, where the flow is handled automatically by the hardware. Since the Diablo 630 does not use the X-on/X-off protocol, use of the emulation mode is only a partial solution. However, since the LaserWriter's buffer is large enough for a page, with most software you should be able to handle the problem by telling the software vou're using a manual-feed printer. Thus, the computer stops transmitting at the end of each page while it waits for you to tell it to go on by pushing a key.

s for software support, first let's consider that old warhorse, Word-Star, from MicroPro International Corp. of San Rafael, California. The installation program for version 3.3 lists the LaserJet as an option among the 28 printer types it supports. But if you select it, you get a message that "this installation provides basic support for Courier 10-pitch font cartridge only."

Actually, it's not even supporting a cartridge. WordStar is using the default font inside the LaserJet, and you don't need to have any cartridge at all, according to a spokesperson at MicroPro. It manages to produce boldface and underlines. The output is identical to that of a daisywheel. MicroPro does, however, offer a "patch" disk that enables you to print both boldfacing and italics with the LaserJet, using cartridge A. The patch is available for \$25 by calling technical support at MicroPro.

The easiest way to access the HP font cartridges is by buying a separate laser driver program such as PrintMerge, from Polaris Software of San Marcos. Calif., or StarJet from Control-C Software of Portland, Oregon. You first edit your text in WordStar by using a superset of print control keys and dot commands that the add-on programs recognize, even though WordStar may display question marks on the side of the screen. With PrintMerge, for example, Ctrl P-A turns on the headline font while ".FC92286b" entered at the top of the file accesses font cartridge B. You can also place dot commands above blocks of type you want printed in adjacent columns and draw horizontal and vertical lines (in a variety of thickness-

WordStar



PrintMerge



es) by listing the coordinates of a line's beginning and ending points in inches from the paper's left and top edges. After exiting WordStar, you load Print-Merge with the name of the file to print. The program automatically redirects output to the serial port and allows you to print up to 99 copies of a document by entering the number desired on a pre-print menu. Copies of the same

page, incidentally, roll out of the Laser-Jet one after another. The first copy is the one you have to await.

As for the LaserWriter, it's not on MicroPro's list. However, the Diablo 630 is listed, so you should be able to use Diablo 630 emulation.

WordStar 2000 lets you designate printers when you install the program. There is no mention of the Apple Laser-

LaserJet Output

To: RJ, MS Fr: WC Re:

Reorganization Of Sales Force

An examination of results* achieved by our regional sales force in 1984 and 1985 indicates that inequities in the distribution of manpower contributed to our failure to meet projected growth rates in the Southeastern and Northwestern sectors. I therefore propose that we add four assistant sales managers to the Southeast and two to the Northwest. We should simultaneously reduce our presence in the Northeast by two assistant managers and in the Southwest by one. Key personnel could be offered the opportunity to relocate. The total number of assistant managers would thus break down according to the following plan:

Northeast--12 Southeast--11

Northwest--9 Southwest--10

Let's all take a lesson from the book, In Search Of Excellence, and rethink the way our company is currently structured.

*Internal Audit Report, January 30, 1986

The WordStar file contains additional dot commands that PrintMerge will recognize: the font cartridge number (.fc), line box drawing coordinates (.bx), the line length (.ll) and the paragraph format justified to the same length (.pf). Ctrl-P-A turns on the headline font and Ctrl-P-B returns to the default text. Offscreen, Ctrl-P-D turns on the italics and Ctrl-P-E makes the type smaller. The PrintMerge pre-print screen enables you to control which pages in a file are to be printed, as well as the number of copies.

Writer in the list of printers. The Laser-Jet, the Corona Laser, and the old Xerox 2700 are listed. Actually, the Laser-Jet and Xerox 2700 are each given two separate modes: landscape mode (sideways) and portrait mode (the way a letter is normally printed).

For the LaserJet in portrait mode, the software supports regular, italic and boldface printing (but not bold-italic),

line spacing of 2, 3, 4, 6 and 8 lines per inch, any 10 or 12-pitch nonproportional font, Helvetica proportional and two sizes of Times-Roman proportional. But the menu is not tailored to individual cartridges. Regardless of what's named in the menu, you'll get what you want only if a cartridge with what you selected is plugged in. Otherwise, you'll probably end up with the default Couri-

er font. (Among cartridges with proportional spacing, only cartridge B is fully supported.) In landscape mode, proportional spacing is not supported.

Samna Word III, from the Samna Corp. of Atlanta, Ga., supports multiple fonts on the LaserJet by using a feature designed to let you change print wheels on a daisywheel printer. Instead of the computer stopping the printer and waiting for you to change the wheel, it outputs a control code for the new font, and goes on. The software lets you use six fonts with a printer, and when you insert the printer-wait command, you enter the number of the font to use.

You select six fonts when you install the printer. By picking the LaserJet, you are given a list (running for two screens) of fonts you can chose from, each with the cartridge it resides on.

Because the LaserJet doesn't allow you to change cartridges while printing a document, fonts selected for a particular file must all be contained on one cartridge. (The B cartridge, for instance, offers half a dozen fonts, including a headline, a tiny type size and regularsize italics.) You can also widen your choices by pretending your LaserJet is more than one printer, since Samna lets you install multiple printers. However, you're still limited to one printer ID per document, and six fonts per ID. You can call up Samna's printer default page later to refresh your memory about how you've assigned each font.

Choosing a font with a new size is not automatically reflected by any changes in the screen display. After inserting the printer-wait command to change the font, you may also want to insert a pitch-change mark, and maybe also change the right margin to reflect the changed line length. Keep in mind that for any of the IBM-compatible word processors (except Microsoft Word) proportional spacing doesn't as yet show up on the screen. That means characters will be fitted closer together in print than you were led to believe from looking at the monitor. Experience with proportional output will give you a better idea of how much extra text you can squeeze on the page.

You can print both portrait and landscape mode in the same document, though not on the same page. The Samna manual also gives instructions for using the LaserJet's manual feed option for printing addresses on envelopes.

Samna also supports the IBM Page Printer and the Canon LPB-8A. The LaserWriter is not on Samna's list of supported printers, but the Diablo 630 does appear, so you could use Diablo

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emulation. As for the X-on/X-off issue, Samna uses the protocol by default for serial printer connections, so there's no adjustment necessary.

WordPerfect 4.1 from SSI Software in Orem, Utah, supports 27 cartridges for the LaserJet. The software allows six printers to be installed at one time, and recognizes a LaserJet with a specific cartridge as a separate printer ID. So if you wanted to use cartridge A, you would select LaserJet A, and so on. Fonts can then be changed using the "printer format change" command. A list of font options can be viewed by invoking the printer menu, but the list is of character tables rather than the names of the fonts in the cartridges. To be sure that the character table you've selected represents a desired font, WordPerfect suggests that you run off a special "printer test" file. As with Samna, you might want to change the margin after selecting a new font size.

If you have the LaserJet+, with its greater memory and the ability to download fonts, you can use Word-Perfect to do line drawings. Using the "line draw" command, you hold down the cursor keys to draw screen pictures, using almost any character to fill in as it follows the cursor. (You can also do that with the original LaserJet if you have cartridges G, H and T—Legal Prestige Elite, Legal Courier, and Tax Form, respectively—since they have the necessary straight-line characters.)

With the LaserJet+, you can also print charts produced in SSI's Math-Plan. Such graphics can also be loaded into WordPerfect files and combined with text, and printed out by the Laser-Jet+. As for the LaserWriter, the Diablo 630 emulation is supported.

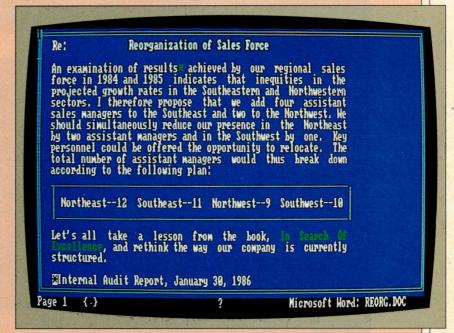
Xywrite III, a publishing-oriented word processor from Xyquest in Bedford, Mass., makes a serious attempt to support LaserJet and LaserWriter.

Xywrite's "printer file" has a generic list of printer fonts. For the LaserJet, it is divided into sets, and each set represents the fonts available on a particular cartridge. The B cartridge is the default mode, though the system gives instructions for changing sets.

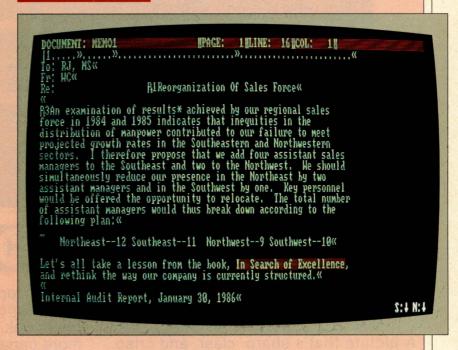
Having chosen your set, you then pick which fonts you wish to use and assign them to screen attributes. Underlined text could be made to represent 14-point Helvetica, for instance.

With a monochrome screen, you could have six fonts, since there are six screen attributes—normal, bold, underlined, reverse, bold reverse, and bold underlined. (An attempt was made to double the number to 12 by using blink-

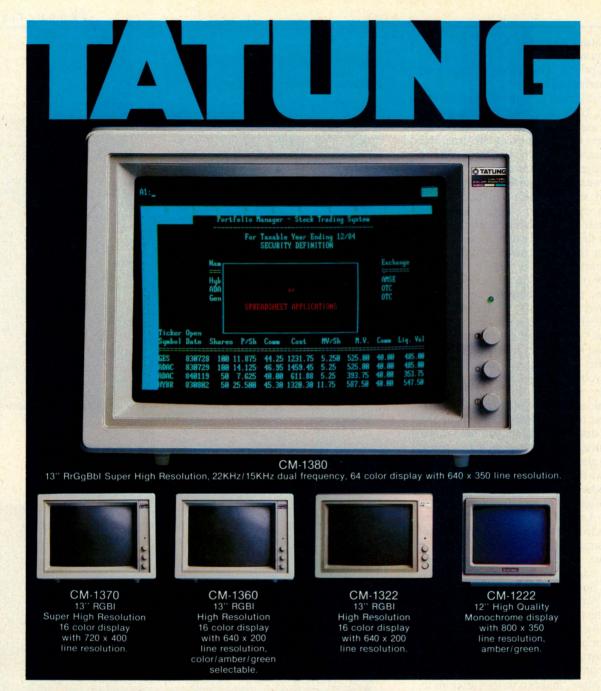
Microsoft Word



MultiMate



Word (MS-DOS) will produce the same output as WordStar/PrintMerge on the previous page. Multi-Mate and MultiMate Advantage won't make head larger (boldface is substituted) nor produce box.



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(For More Information Circle 53)

ing characters, but as Xyquest director John Hild notes, "The repetition [rate of blinking] was so grating that you just wanted to go away.") With a color screen, the number goes up to 120.

Xywrite supports the PostScript language used by the LaserWriter, and the procedure for using the LaserWriter is about the same as with the LaserJet, except that only two type sizes are supported for the four LaserWriter fonts. However, the software allows you to size your own characters. If you want 13-point characters, for instance, you can go into the 10-point table and multiply the values by 1.3.

The X-on/X-off protocol issue is handled by treating the LaserWriter as a manual-feed printer: You push a key to print a new page. Xyquest hopes to overcome the problem with future versions of their software.

MultiMate Advantage and Multi-Mate from Multimate International Corp. of East Hartford, Conn., do not as yet allow you to mix proportional fonts, headlines, italics and box drawings in the same file. You can, however, do limited mixing, as long as you're using a non-proportional font.

Each cartridge on the LaserJet is identified as a separate printer on the Printer Tables diskette. You copy those cartridges you need onto your program disk. To change fonts, you invoke the pitch change command and then give it a pitch number, one through nine. A symbol which looks like "P+" followed by "I," for example, invokes boldface in your document. The Print Parameters screen has to be correctly set to produce the desired effect. Advantage comes with a chart showing which pitch number represents which font for each printer ID. MultiMate does not support the Apple LaserWriter.

Microsoft Word, offered by Microsoft Corp. of Bellevue, Wash., supports both the LaserJet and the LaserWriter, and also makes a stab at upholding the doctrine of "what you see is what you get."

When used with a graphics card, Word 2.01+ can show italics, double underlining, super- and subscripts, strikethroughs, proportional spacing, and other special printing characteristics on the screen, much as they will appear on the printed page. The chief drawback is that different font sizes cannot be shown—all the characters on the screen are the same size. If you don't have a graphics screen, special characteristics are shown as underlined text (except boldfaced text).

When you install the software and indicate you have a LaserJet, it asks which

The Care And Feeding Of Lasers

The primary maintenance consideration for laser printers is that the toner (dry ink) runs out and the coating on the print drum decays. With a photocopy machine, you handle the problem by adding more toner and fiddling with the contrast knob. Canon addresses the problem by using a disposable cartridge containing both the toner and the drum, so the LaserJet and the LaserWriter use this method. (Both machines use Canon's printer engine.)

You replace the electrophotographic (EP) cartridge about every 3,000 copies. There is a window on the cartridge that turns red after about 3,000 pages. However, the toner can run out faster if you are doing a lot of heavy graphics—you have to look for white streaks on the paper. When they appear, removing the cartridge and shaking it to redistribute toner may extend its life.

People commonly note that the cartridges used in Canon's personal copier machines cost less. Can they be used? Sorry, they can't, since they work on opposite principles. In the laser printer, the points that are exposed to light pick up ink. In the copier, points that were left in the dark pick up ink. If the copier approach had been used in the printer, the laser would have to work 20 times harder (since only about 5 percent of the average page has ink on it) and would wear out sooner.

While it has been noted that you could slit open the cartridge and add more toner, you'd still have the problem of drum decay.

The Canon's "corona wire" also needs cleaning whenever you see fuzzy, vertical lines on the page. You clean it by running a special tool down a slot in the toner cartridge. Various other parts must also be wiped clean from time to time. But you can get at all these things by simply opening the unit.

-L.W.

cartridge you have, and the system has a list of what's available on each cartridge. Word supports cartridges A, B, D, E, F, L, the default font and landscape mode. When you change fonts, it gives you a list of available fonts; and when you change sizes, it gives you a list of available sizes. Line lengths and spacing are changed automatically to reflect changes in font size.

Word supports the LaserWriter with a PostScript interface and automatically handles the X-on/X-off protocol. (It also supports about 10 other electrophotographic printers, including the IBM Page Printer.) With the Laser-Writer, the Times, Helvetica and Courier fonts are supported, with three modes for each (normal, bold and italic) and three sizes for each mode (8, 10 and 12 points for Times and Courier, which are commonly used for text, and 12, 18 and 24 for Helvetica, which is commonly used for headings). The symbol font is not supported. Text is formatted the same way as with the LaserJet.

There's also a networking version of Word, with formatting files that can be shared by the users. With the correct hardware, it's possible for IBM-compatible computers and Apple Macintoshes running Word to be connected to the same network and both use a LaserWriter, using a file conversion program supplied with the Macintosh version of Word.

he Macintosh version of Microsoft Word uses the LaserWriter driver program supplied by Apple. (Because of Apple's strict operating system design, any printer driver can be used by any application program.) Word supports sizes from 4 point to 127 point (an inch and a half). If you've only loaded one size for each font, Word will re-size them when necessary. Any font residing in the "system" folder" can be used, but for best results, Microsoft suggests you stick to the LaserWriter's internal fonts.

Size is shown as-is on the screen—what you see is what you get, only not as jagged, since the printer's resolution is better than the screen's resolution. Word will also do boldface and italic versions of the basic type fonts, but not double-width characters.

You can use HP's LaserJet with a Macintosh by employing Microsoft's \$249 MacEnhancer (2.0), a port extender for the Mac that includes printer support software. The MacEnhancer plugs into one of the Mac's RS-422 serial

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Daisywheel

Laser

Dot Matrix

Aa Aa A

Enlarging business-letter-size characters produced three different ways reveals that a daisywheel (or typewriter) still offers the sharpest characters. Laser output (at 300 dots per inch) is a close second while dot matrix (from a 9-pin printer) is a distant third.

Should You Go Laser?

asers are undeniably trendy, but you should never let yourself be seduced by shiny hardware. You should ask, "Is this what I need?"

The advantages of laser printers are pretty obvious—printing that looks typeset, speed, lack of noise, and the potential to do graphics. The disadvantages are less obvious, but there are enough of them to make the purchase of a laser printer something you shouldn't approach lightly.

- Most (not all) have relatively small paper trays, limited to about 100 sheets. If you are in the habit of loading a 3,000-sheet box of fanfold paper into your printer and letting it run all night, a laser printer won't do the job. However, outside manufacturers are beginning to introduce additions.
- The units aimed at the personal market have fairly low "duty cycles" of 3,000 to 5,000 pages a month. (The duty cycle is a rough estimate of how much use a machine can take without excessive wear.) Nancy Erskine, research analyst for the Gartner Group, an office automation consulting firm in Stamford, Conn., suggests you estimate your monthly output, double that figure and then shop for a machine with the necessary duty cycle.
- Some models deliver the finished page face-up, some deliver it face-down. This is an important consid-

eration if you plan to print lengthy documents, since face-up delivery will put the pages in reverse order. Printers using Canon engines deliver pages face-up, so expect to spend a little time reordering the stack.

- Fancy graphics will slow the output to as little as a page per minute. Even using proportional fonts can slow you down perceptibly. So if you were calculating on generating graphics at eight pages per minute, think again.
- Mistakes cannot be detected until the entire page is printed. You can't print one line and rip off the sheet to check your margins, for instance.
- It's not possible to print on multipart forms, since they need the impact of metal striking the top sheet.
- If you were planning to print on letterhead stationery, keep in mind that heat inside a laser printer may cause "thermograph" letterheads to peel off. A standard offset letterhead, though, will work fine.

If you're already sold on laser printers but are trying to decide between a less expensive model and something like the LaserJet, consider your applications. Most text printing needs can be satisfied with a basic laser and a couple of font cartridges. Sharp graphics, though, demand costlier lasers with more memory.

-L.W.

ports. In return, it gives you an IBM-compatible parallel port and two RS-232 serial ports. The included software provides the needed printer driver.

When using the LaserJet, you use the Mac's "dialog box" to indicate which fonts and sizes are available on your cartridge. Default values are provided for the more popular cartridges. The software picks the fonts that best match what's being shown on the screen.

With the LaserJet+ and the MacEnhancer you can do Mac graphics. The main difference from doing graphics with the LaserWriter is that the resolution will be 150 dots per inch, rather than 300. With its smaller RAM capacity, the LaserJet+ can only handle 150 dots per inch if a full page of graphics is to be mapped. It can handle full resolution for half a page of graphics, but the MacEnhancer does not support this option. (The LaserJet Classic prints a full page of graphics at only 75 dots per inch, which is equivalent to an average dot matrix printout.)

With the exception of Microsoft Word—especially the Macintosh version—none of the word processing packages come close to living up to the potential offered by laser printers. That's because what you see on the screen is not what you get on the page.

The basic problem is that printers have advanced a step ahead of display technology. Most monitors are essentially glass Teletypes. They cannot mimic all the tricks that a laser printer can pull. Nor is simply plugging in a graphics board the answer, since screen resolution is so inferior to the hard copy. The printer can resolve to 300 by 300 dots per inch; but with personal computer graphics, you're lucky to get that many dots on a whole screen. And as Charles Stevenson, chief programmer for product development at Micro-Pro points out, faster "screen driving" software is also desperately needed, and faster CPUs wouldn't hurt either.

Because desktop laser printers are so new, standardization isn't here yet. But as Nancy Erskine, research analyst for the Gartner Group consulting firm in Stamford, Conn., notes, companies seem to be merging toward two typesetting languages—PostScript from Adobe, and Interpress from Xerox. One instruction set that everyone can agree to will greatly simplify software support.

So, we seem to have caught the evolution of laser printers and personal computers at a time when they are trying to mesh gears. They have a beautiful future performing together, but for the present they're not entirely in tune.

The difference is on the inside.

Most laser printers are similar—on the outside.

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A high speed interface card plugs right into a slot in your IBM™ or compatible PC, XT, or AT. It provides a powerful graphics capability. And faster data transfer—up to 30 times faster than Hewlett-Packard's LaserJet Plus.

The Desktop Printshop is compatible with, Microsoft Word, Wordstar, Wordstar 2000, MultiMate and many other popular applications programs. And Epson emulation gives the Desktop Printshop a ready-to-run solution for many programs that other laser printers can't use.

Type styles in various sizes load from diskette. Not expensive cartridges. The Desktop Printshop automatically loads them from memory, as specified in the document. Future upgrades are added by simply changing a diskette. Not with an expensive hardware

modification.

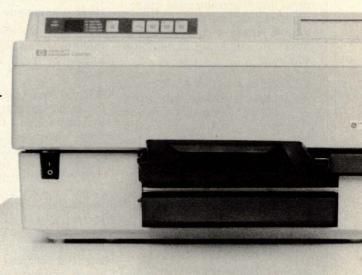
Cordata Desktop Printshop Comparison

Feature C	esktop Printshop	LaserJet+
Price		The Charles
End User Price	\$2995	\$3995
Cable	Included	\$ 50
Interface	IBM-PC	RS232/
	long slot	Centronics
Emulations	Epson	
Memory	and the second	
Total Memory	704K	512K
Memory Available to User	>400K	395K
Graphics		
Graphic area/page	36%	33%
30% Graphic Page Time	20 sec	2-3 min'
Type of Graphics	Raster/Epson	Raster
Box/Line Drawing	Yes	Line only
Fonts		
Fonts included w/system	38	3
Auto Downloadable Fonts	Yes	_
Change Default Font	Yes	-
Change Font Memory Size	Yes	Yes
Max Fonts Per Page	32	16
Print Entire PC Font	Yes	AND THE
Features		
User Defined Macros	99	32
Justification Command	Yes	- 1
Indent Command	Yes .	4.0
 Horz' Moves Relative/Absolut 		Yes
Vert Moves	Yes	Yes
Absolute Tabs	Yes	
Variable Pitch Command	Yes	-
Variable Super/Subscripts	Yes	CONT.
 Repeat Character Command 	Yes	
 Change Command Character 		-
Simple Commands	Yes	Total Total

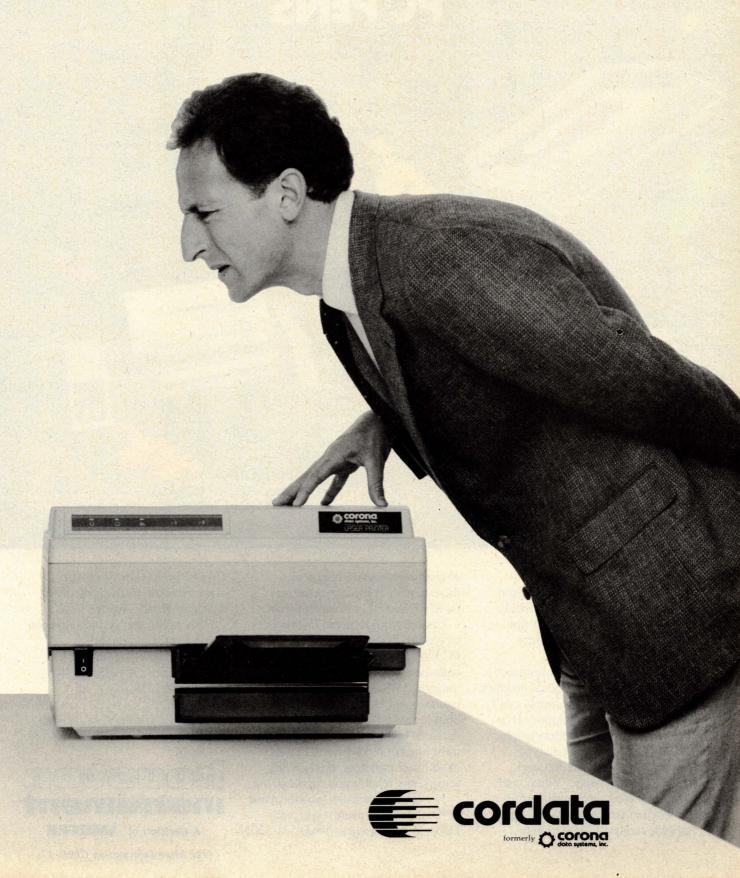
Call Cordata toll-free at (800) 621-6746 (in CA: (805) 495-5800) for the name of your nearest Desktop Printshop dealer. Or write Cordata Inc., 275 East Hillcrest Drive, Thousand Oaks, CA 91360. TELEX 650-2696270. In Europe: Holland (032) 40-18111. Even if the

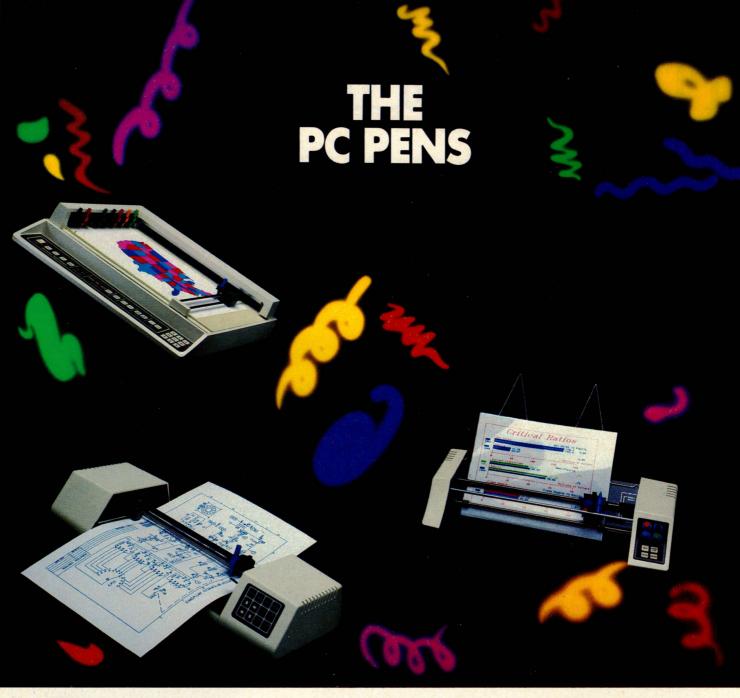
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The Desktop Printshop.



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*U.S. suggested retail price for PC595 model plotter. Pricing subject to change. DM/PL is a trademark of Houston Instrument.

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(For More Information Circle 57)

PRODUCTIVITY



PHONE DIRECTORY SETUPS

RAM-resident telephone dialers alleviate the tediousness of making calls and increase productivity.

oug Hughen is the manager at a branch of The Kentwood Company, a Denver, Colo., real-estate brokerage firm. John McDaniel is vice-president of sales for Northern Electric Co. of Chicago, a health care aid manufacturer. George Abbot White teaches at Harvard University in Cambridge, Massachusetts. Stephen Marano is a financial analyst at AT&T Communications in Basking Ridge, New Jersey.

These four professionals have at least one thing in common—they all depend on the telephone to reach clients, customers and contacts with whom they do business. In this respect, they aren't much different from most of us. Consider how many times a day you use the phone and how difficult your job would be without it.

Also consider how much easier your job would be if you could use your phone more efficiently. The people mentioned above have found a way to

by Jim Bartimo

PERSONAL COMPUTING/APRIL 1986 101

do just that. By using their computers, modems and various telephone dialing programs, they have automated the phone call—eliminating time-consuming Rolodex searches, wrong numbers and even manual dialing itself.

Their key is software designed to—if not marry—at least link the telephone and the computer. These packages include Higgins from Conetic Systems (San Leandro, Calif.), The Little Black Book from Cygnet Technologies (Sunnyvale, Calif.), Pinpoint from Pinpoint Publishing (Oakland, Calif.), Ready from Living Videotext (Mountain View, Calif.), SideKick from Borland International (Scotts Valley, Calif.) and Spotlight from Lotus Development Corp. (Cambridge, Mass.).

Dialing programs, usually one of a set of RAM-resident utilities, let you set up a phone directory of names and numbers and save it to a disk file. When you want to place a call, you recall the directory with a few keystrokes and select a phone number (usually by positioning the cursor over it). The dialing program signals the modem to generate the tones necessary to make the call. When you hear, through your modem's speaker, that you've successfully made a connection, lift the handset of the telephone connected to the modem.

eal-estate broker Hughen actively uses his dialer in the course of daily business. He keeps 100 to 200 of his "A" clients on the Higgins electronic Rolodex on his Columbia personal computer. These clients represent hot prospects or those with whom Hughen has closed a deal in the past and wants to reach easily if the right piece of property comes onto the market.

Higgins, is actually a time management program that incorporates several desktop organizer functions, such as a calendar, Rolodex and filer, in addition to the dialer. Hughen finds the filer most helpful. When he scrolls through his on-line Rolodex, he may see a client who's expressed interest in a new property, or remember the name of a client when he lists a new property. Hughen will use Higgins's search function to locate the client's name and number, then dial the client with a few keystrokes and use Higgins's filer to record business. "I'll call up a client with the Higgins dialer and start taking notes in the filer on who's interested in the property and who's not," says Hughen.

"Show a salesman a spreadsheet and he'll ask you how it will help his business," Hughen says. "But people who make their living on commission see the value in Higgins because it prevents them from forgetting about a client or property. Dropping the ball costs salesmen money."

Northern Electric's McDaniel is also in sales, but instead of tracking property, he tracks regional sales managers and field salesmen with his IBM PC and The Little Black Book. This pop-up telephone program not only lets you dial from a list of names, it enables you to print out the list as pages formatted for a vinyl pocket address book provided with the program. You can create as many of these customized "black books" as you need.

McDaniel also distributes little black books to his regional managers so they can reach field sales people easily. "There are 70 people on the list, along with their phone numbers," McDaniel says. "People move around, change addresses, or leave their jobs, so it's nice to have a way to immediately update the list and have it with you at all times."

White of Harvard University uses The Little Black Book, too. In addition to his teaching responsibilities, he is a curator of a small library at Harvard. He creates individual phone lists for each of his jobs.

White finds his dialer indispensable, especially in his library work. A number of contributors support the library, all of whom White catalogs in one of his phone directories. He has set up identical directories for each of his three computers, an IBM PC XT and two PCjrs. When it's time for him to solicit funds from 400 supporters, White can call them from whichever of his computers is handy.

AT&T Communications' financial analyst Marano uses Ready to keep track of the members of his company department. Rather than a true phone directory, Ready is a RAM-resident outlining program for the IBM PC, but this has its advantages. Marano lists department names and numbers in outline form. Ready supports headings much like a data base would, so Marano can divide and order his list according to his needs.

"You can categorize the list in a way that's meaningful to you," Marano says. "I sort by department or by group within a department." By splitting the list this way, Marano searches through fewer names when looking for one person in a specific department. To actually make the call, Marano uses Ready's dial function. And Ready's outliner lets Marano add as much text as he likes to

Telephone Dialers At Work

Higgins, a time management program, includes a dialing function. Here, Higgins superimposes its phone log window over two other windows, high-

lighting the number it's dialing in a fourth window.

2

You call up The Little Black Book's directory by hitting Alt-D. When the screen comes up.

you type in the name of the person whose number you want to find and hit the Return key to dial it. The Little Black Book also displays the last number you dialed at the bottom of the screen.

3

Ready's phone directory is really an outline file you create with a template the program When you want to call

provides. When you want to call someone, you select Dial from one of Ready's menus.



SideKick lets you call a number you happen to have on-screen as well as one in your directory.

Here, SideKick's dialing an onscreen number that's actually part of a Xywrite letter.



Pinpoint also lets you dial a number you have on-screen. Here, Pinpoint superimposes

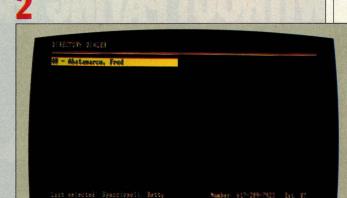
the dialer window over a letter.



Spotlight, like SideKick, dials the number in your telephone directory you highlight with the cursor.

Here, Spotlight dials the number highlighted in its directory.





Select party or alphabetic directory: Due f & r + + or enter number to select

+ Fhome Sook
+ Kilker, Gary
- company: Activenture
- address: 88 DBI Lane
- city: Pacific Grove
- state: CA
- zig: 89375
- phone: 468-888-9999
+ Winer, Pave
+ Singer, Alvy
+ Russel, Leon
+ Mixon, Richard
+ Hamilton, Georgre

"secondary" command menu
copy alpha hoist de-hoist setup color dial time unload
dial the phone number in the bar cursor headline

File Personal State | SECOND |

Dear Steve, *

* Please call the following oustomers for those sales leads we discussed. *

* Pick Sordon, 213-882-8830, Chicago, II+

* Rod Johnson, 323-912-3232, Boaton, Ma.*

Tim Franzen, 989-222-3233, Falo Rito, Ca.*

* Thanks, *

* Jie*

Dialing: 888-222-5888

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Deerican Bed Cross 908-223-5888
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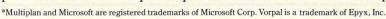
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each entry during the course of a telephone call.

A template included with Ready helps you create the directory outline. It looks like a Rolodex card, with a place for name, company, address and telephone number. Once you enter all your names, you can alphabetize them using Ready's Alpha function. This saves you from typing in the names in alphabetical order and from having to find the right spot for a new name.

Ready is restricted in the type of modem through which it will dial, though. It is designed to work with a Hayes internal or external modem, but some Hayes-compatible units may not work with it.

SideKick and Spotlight, two popular RAM-resident utilities, include an ASCII table, notepad, calendar, and calculator in addition to a telephone dialer. Both products let you dial numbers in two ways—from the formal directory or

from a number you have on-screen.

To dial an on-screen number with SideKick, you press Alt-D with any one of its windows active. SideKick automatically highlights the first phone number there; you dial it by pressing the Return key. If you press an arrow key, the cursor moves to the next on-screen number. Alternatively, you can press the spacebar to move into SideKick's formal directory file.

ou can set up a phone list in a word processor or in the SideKick notepad, and enter notes as you talk. This would be of particular interest to a salesman with long lists of potential customers. To make sure he's contacted all of them, he can type a note indicating he's called someone on a certain date and make sure he makes all the follow-up calls necessary.

You'll probably

find creating

your directory

easiest with a

word processor.

Dialing from a word processor gives you greater flexibility in using a phone directory—SideKick's dialer doesn't let you enter notes or change numbers without first loading PHONE.DIR into SideKick's notepad or an independent word processor.

To sort a phone list with SideKick, you first call the list into SideKick's notepad and use the WordStar-like sort function (Control-K-S) after defining the area you want sorted.

Some dialer products, like Pinpoint for the Apple II family running Apple-Works, even let you sort your phone list by date. This is useful in updating your directory. If you place the date you last called someone next to their name, you can remove any names you haven't called for a year or so through a single operation.

SideKick's dialer has a search function that lets you search the directory for a person's name or string of words.

How To Enter Those Phone Numbers

Keeping a phone directory in your computer and using a modem to dial numbers is one of life's little conveniences. But like all conveniences, you have to work for it. In this case, the work comes in the form of en-

tering your paper directory's names and numbers into your phone dialer. That fat roll of Rolodex cards might be enough to scare you from the task, but you can make the job simpler by following the tips outlined below.

Unless you have a secretary or you're willing to type in all your Rolodex names at one sitting, you might want to break the job down into smaller bites. To make the task simpler, type in the names by letter—do the A's on Monday, the B's on Tuesday, and so on.

Or, first type in the names and numbers of the people you dial most frequently. By so doing, you can take immediate advantage of your phone dialer and, in turn, be inspired to enter even more.

You can enter the names and numbers directly into your dialer, but you'll probably find it easiest to create your phone directory with a word processor. A word processor gives you the editing functions most phone dialers lack, and you can save your list in ASCII format (or convert files to ASCII by printing to disk) and merge it with the on-line dialer.

Make sure you include any access codes your phone system or long distance phone company require. If you use Sprint or another carrier that requires a local number first, use your dialer's Pause function to separate the access number from the main number. For instance, when you enter a name and phone number, type in the local access number and insert a character (usually a comma or period) that tells your dialer to stop dialing for a moment. This

gives the phone system enough time to make the proper connections. Then type in the access code and the number of the person you're calling.

If you use a word processor to enter these numbers, you can save a lot of time in retyping the local access number and code by using the word processor's Define and Copy Block commands to insert the required characters before each telephone number.

Another advantage to creating your phone log with a

word processor is you don't have to enter your names and numbers alphabetically. Type in the last name first, the first name last, the addresses and the phone number. Many word processors let you sort a list alphabetically with a couple of commands. If your word processor doesn't let you do this, current versions of MS-DOS let you sort files alphabetically by running the sort command from your DOS disk. At the A> prompt, type sort < name of old file > name of new file. The old, unsorted file will be sorted alphabetically

and placed into the new file.

If you're using SideKick, you can create a medium-size directory in the Notepad and then sort it automatically by defining the entire list as a sort field and pressing the Control and K keys simultaneously, then pressing the S key. Save the Notepad files using the F2 key and you can then call it into the dialer. Current versions of SideKick's Notepad can hold a phone log of about 50,000 characters.

If you still feel unhappy about entering in all your phone numbers, try entering each number as you need to call it. By adding numbers only as you need them, you'll be dialing no more than you would have anyway and the numbers will be available in the phone dialer thereafter.

-J.B.

This is helpful if you can remember only a person's first name. If the person's name is Dave, for example, you can search for all the people named Dave in your SideKick dialer and stop at the one you want.

If you remember only the name of the company Dave is with, SideKick will find that for you. Then you can press the Return key to dial Dave through your modem.

SideKick even lets you call a different file into the phone dialer so you can keep several different lists of numbers—say, several for work and one or two for personal use.

If you have a phone system at work that requires that you dial a prefix before the main number, you can keep a separate list of numbers that all contain that prefix. By typing "@" after the prefix, SideKick automatically stops dialing and waits for the phone system to give you an open line. When you hear through your modem's speaker that you have a free line, press the Return key to

dial the person's telephone number.

SideKick's dialer, like many others, requires that you type in names in a particular format. With SideKick, you must follow the name with a space, followed by the telephone number and a space and then a comment or address. Each number can only take up one 80-character line in the SideKick dialer, so you're limited in the amount of information you can record on any given person. SideKick's search function will find a string of characters in any of the three fields if you select the Search All function.

Future versions of SideKick are expected to enable you to keep more than one phone dialer window on the screen at once. This will help a salesman making calls across the country. He can create a different phone directory for each time zone and close the window as that time zone reaches the end of its working day.

The newest SideKick for the PC, called Traveling SideKick, lets you print

out your phone directory in a format that fits conveniently in an organizer binder. You can carry this binder with you and update the phone list manually or by computer when you are back at your desk.

The Macintosh version of SideKick keeps track of how long you've been on the telephone. This feature, also found in Higgins for the Personal Computer, is especially helpful for professionals who bill clients by time. A lawyer or agency public relations professional can track the time employees spend on behalf of a given client, record that time in a phone log and bill the client according to that phone log.

The more you use the telephone, the more you'll benefit from an on-line telephone directory. Even in its most unadorned application—as a simple dialer—it'll increase your productivity. Combine it with a text processor or a search and sort function and you'll realize how versatile a telephone directory and dialer can be.

The Electronic Phone Directory

Many professionals manage phone lists with programs that offer alternatives to dedicated dialers. An address book or Rolodex is really just a simple paper file—one you can manage with a simple

filer program and gain some extra features in the process.

Filers like PFS:File from Software Publishing of Mountain View, Calif., or Perfect Filer from Thorn EMI Com-

puter Software of Costa Mesa, Calif., offer more than enough list management power to create an electronic Rolodex. To do so, you first create a template with labels (fields) for a name, address, city, state, ZIP code, telephone number and notation entries. You use this blank form as a guide in adding names to the list.

The phone directory you'll end up with will be more flexible in some ways than the ones dialing programs provide. File managers let you retrieve files based on certain criteria.

To call up a file on a specific person, for example, you'd type in his or her name in the name field on the Retrieve File screen. Since only one person should have that name in your Rolodex, the file will come up and you can dial the number manually.

While this process requires a bit more work than using a Rolodex, you get benefits that a Rolodex can't offer. For example, you can establish a directory of people you regularly call, so you won't lose track of one or leave one out. Using a file manager as a Rolodex, you can call the person in file number 50, takes notes on the screen of your conversation, and go on to file 49. By the time you reach the last

file, you'll be sure you've spoken to everyone on your list and you'll have a record of what you discussed.

Simple filers also let you sort your list by any entry in a field. Suppose you're planning a business trip to Nevada. If you boot up your directory file and type in "Nevada" in the city field of the Retrieve Files screen, you'll get a list of all the people you know in that state.

Similarly, you can search and sort by more than one

field to produce even more specific lists. If you want to sell skis to deskbound executives, sort your list by profession and areas of the country that receive heavy snowfall.

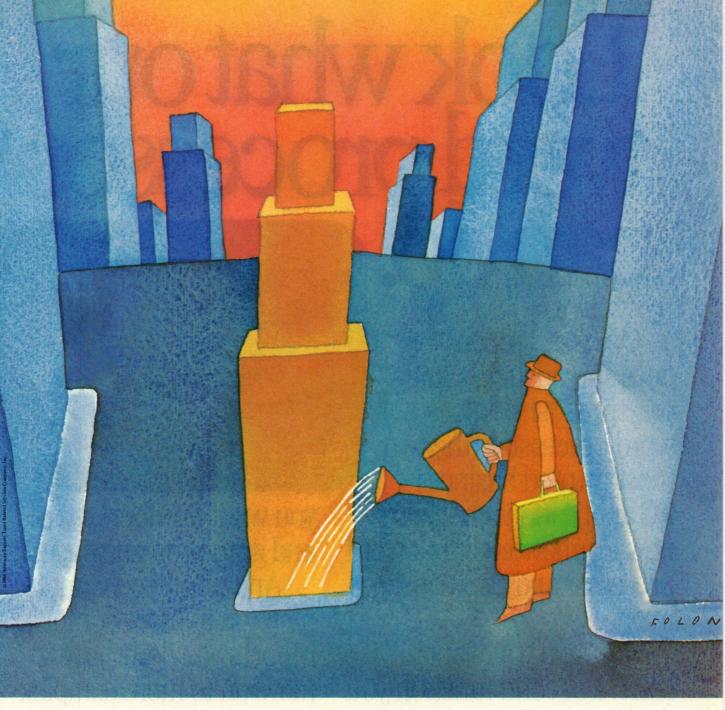
Since most file managers also have some sort of report generator, you can print out a sorted list of names to take with you on the road. Or, you can elect a printout in mailing-label format for mass mailings. After the letters go out, you can retrieve the list again and start dialing the recipients using the numbers on the screen. In a

special place for comments, you could note the response to the mailing, so you'll remember what you discussed with the person the next time you call.

Full-featured data base products like dBase III from Ashton-Tate of Torrance, Calif., or Paradox from Ansa Software of Belmont, Calif., can act as a Rolodex, but these programs probably represent overkill and you'll spend about \$500 more than necessary.

The capability of a file manager is impressive when you use a little imagination. And if you ever do get a modem, you can still use your directory with an autodialer.

—J.B.



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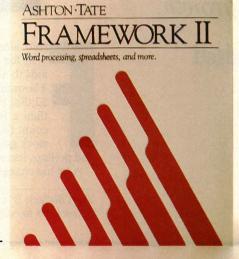
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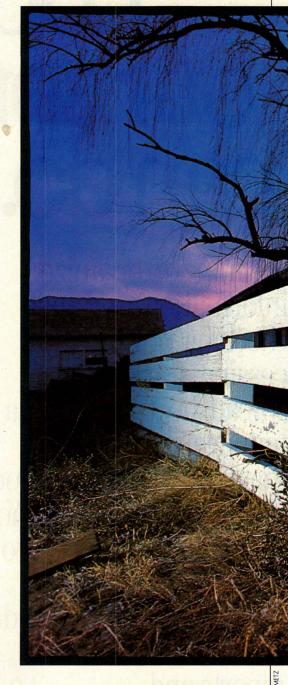


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Getting A Handle On Your Business

An effective business accounting system can mean more than day-to-day efficiency. It can also be the analytical impetus for smart and profitable growth.

by Tom Badgett



rom almost the start, personal computers vied for a place in small-business offices as aids to accounting and bookkeeping chores. Thousands of early users paid \$1,000 to \$2,000 for accounting programs, yet more than a few discovered that their ability to count the dollars coming in and the units of stock going out was no easier than before—and perhaps less reliable to boot.

A lot has changed in a decade of personal computer

Tom Badgett is a writer who uses accounting software to track his free-lance business.

GEORGE STEIN



development. You can still pay \$2,000 or more for accounting software. If you do, you will undoubtedly get a lot more for your money than before. But even more encouraging is the fact that today, you can spend as little as \$50 for a program, and wind up with a software solution to the most basic and universal business accounting needs. Thousands of small-business men and women are discovering that thanks to lower prices and improved reliability and functionality, they can turn to a personal computer program to get an all-important handle on their accounting. The long-held belief that throwing more money at a software problem ensures a solution simply isn't true anymore.

DAVID JONES OF RENO, Nev., has seen his real estate and investment firm's accounting system evolve to a \$100-per-office software solution. "This is better than I had on the mainframe," he proclaims. "I am impressed."

Rose Associates of Hatboro, Pa., for example, sells software for general accounting or vertical markets for \$49. How, you might well ask, can such a program be more than a limited-performance shell?

"The research and development has been done over the past 16 years," says developer Roy Rose. "The General Ledger, for example, was written for an accounting firm to do their client writeup work. This stuff is rather mature."

Gerald Metzler, owner of Winding Glen Woodcraft, a cabinet manufacturing firm in Christiana, Pa., spent months looking for a reasonably priced package to run his accounting on an IBM Personal Computer. "They didn't have the flexibility we needed," Metzler reports. On the verge of contracting for a \$2,500 custom inventory and accounting program, Metzler learned of Rose's manufacturing package.

"I thought, 'For 50 bucks you can't go wrong," Metzler says. "And with Rose, there is a money-back guarantee." The custom software producer refused to guarantee that the software would even work in his business. A money-back offer was out of the question. Today, Metzler is a satisfied believer in low-cost accounting software, despite the considerably demanding bill of material needs of his company.

"We take rough lumber into the shop, add some labor and some machining, and wind up with a part that gets assigned a number," Metzler explains. "Then we move the part into subassembly, then out into a finished product." The computerized inventory system tracks this constantly changing part through the process.

"This is better than I had on the mainframe," says Cougar Mountain software user David Jones, chief financial officer with Doane Western, a real estate and investment firm in Reno, Nevada. "Software has changed that much. This is actually a better system." Jones paid \$695 per module for the multiuser accounting system that his firm runs on AT&T personal computers. Now he's installing the new ACTG-1, \$99 package in satellite offices. "ACTG-1 is the same package we have been using, except for the network support. I am impressed," Jones says.

"It was cheap," says Dallas entrepreneur Mark Wilson, a founding partner of Metroplex Detailing and Motor Sports, who turned to Dac's Easy Accounting to help run his business. Still, Wilson gained more than merely a bargain with Easy Accounting. "It is very sophisticated, and conforms to rigid,

strict accounting methods," he notes. Wilson, whose background is system design and accounting, especially liked Dac Easy's efficient use of disk file space.

"It required long hours to get the thing going," he reports. "God, it took a long time. And remember that this was one person doing it—from organizing, reading how to do it and deciding how to set up the books, to doing it."

But for a startup company needing a very precise picture of its tenuous and formative status, the accounting pro-

The emerging generation of low-priced comprehensive software effectively means that nearly anyone who needs personal computer-based accounting can afford it.

gram proved to be the right prescription. "It breaks down into a very detailed analysis on how you are spending your money," says Wilson.

Wilson's time invested early in the process saved time later. He had been spending about 10 hours a week with a manual accounting system, and he wasn't getting the information he needed. With Dac Easy, he had better reports; and the total time spent on accounting was reduced to about two hours a week. As the business grew, the benefits became more significant.

What program you use isn't important, Wilson says, "because any program that can effectively keep up with your net worth and what you are doing month by month helps you manage your business better."

Although the emerging generation of low-priced, comprehensive accounting software effectively means that nearly anyone who needs personal computer-based accounting can afford it, price alone should not be the basis of choice. A more elegant and sound methodology would begin with you asking yourself what you want to hold in your hand when the processing is over. Your book-keeper and accountant are good resources for this phase of system planning. They can tell you what lists and

reports the computer should provide.

Experienced users also point to five major checkpoints for the business user who is shopping for an accounting system: user interface, technical support, documentation, flexibility and reliability. Although low-priced software can be powerful and flexible, each business is different, so consider price last.

The requirements for the user interface—the way the software displays information on the screen, prompts you for information and constructs reports—will differ from business to business. For example, you'll require fewer help screens and elaborate error checking if you already have some accounting and computer experience. A friendly interface, however, can make software easier and more efficient to use.

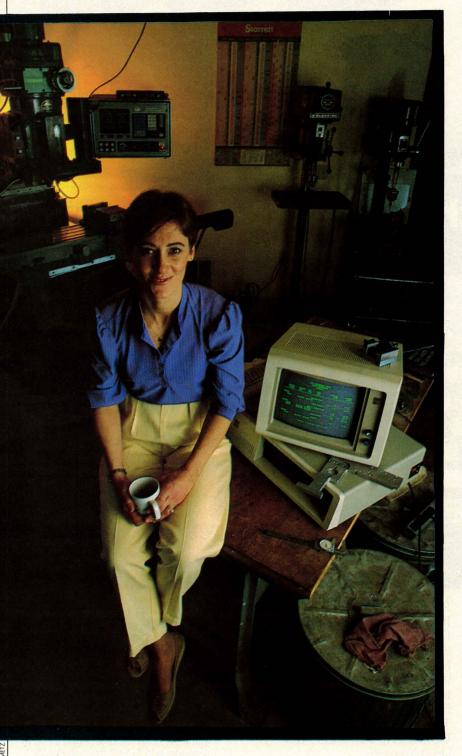
Users of Rose Associates' software, for example, can update the customer or inventory file from the invoice routine, saving time by entering address changes without leaving the invoice routine. One Rose customer bought the software on Wednesday to send out customer invoices on Friday. By ignoring the general ledger interface, the user built customer and inventory files during the invoicing procedure. This is not the recommended installation process, but such flexibility and ease of use help make the software efficient and effective.

A number in the lower right-hand corner of every Cougar Mountain screen corresponds to the appropriate section in the user manual. A prompt also tells the user exactly what information should be entered.

Chang Laboratories' Rags to Riches keeps all data in system RAM to provide fast screen updates that immediately display the result of any data entry. The company believes this approach instills confidence in the user, reducing the fear frequently associated with computerized accounting. The newest release from BPI Systems, the Enterprise series, uses a similar design.

"I would say that 50,000 of our 70,000 users are first-time computer users and first-time accounting users," estimates Dac Software president Kevin Howe. BPI estimates that accounting software is the first software purchase for 75 percent of their customers. Considering such estimates, it is not surprising that accounting software users experience some difficulty setting up their software, understanding the documentation or using some modules.

With software prices cut sharply, end users find they must pay for after-



MICHELLE STINNEY of Gilroy, Calif., searched for two years to find a bookkeeping solution for her engineering firm. She learned an accounting package in two days and then spent the next three weeks entering a year's worth of company data.

port Plus program, he says, "we are assuming that no dealer or reseller will ever support our product." Although basic accounting con-

Although basic accounting concepts are the same for everybody, each software producer has a different idea about how these concepts should be implemented. Well-designed, clearly written documentation helps you install and use the software.

"I was intimidated by the software and by the people selling it," says Michelle Stinney, of Pulsar Engineering, in Gilroy, California. She finally decided to buy Peachtree's Back to Basics after spending two full days in a computer store reading the documentation and working with the program. "The best part was their overview of accounting," she says. "I have been reading accounting books off and on for years, and I was just getting frustrated."

Documentation is one area where price is readily evident. Peachtree, for example, supplies documentation replete with flashy color photographs, an introduction to account

ing concepts written by a nationally recognized expert, slick paper and colorful covers. Their Back to Basics software, which provides general ledger, accounts receivable and accounts payable, sells for \$395. Rose Associates software, on the other hand, includes accounts receivable, accounts payable, general ledger, inventory, order entry, purchase

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market support. The rate is around a dollar a minute, usually billed to a national credit card. Generally, users must also pay any long-distance telephone charges associated with the support call. Some of the higher-priced software can be purchased with a reasonable annual service contract. In a few cases, manufacturers offer toll-free telephone sup-

port. Most companies will provide accounting advice as well as software support, if you're covered under the terms of their service agreement.

"Although dealers will tell you otherwise, we already provide most of our software support," says Jerry Baldwin, vice-president of sales and marketing for BPI Systems. With BPI's new Sup-

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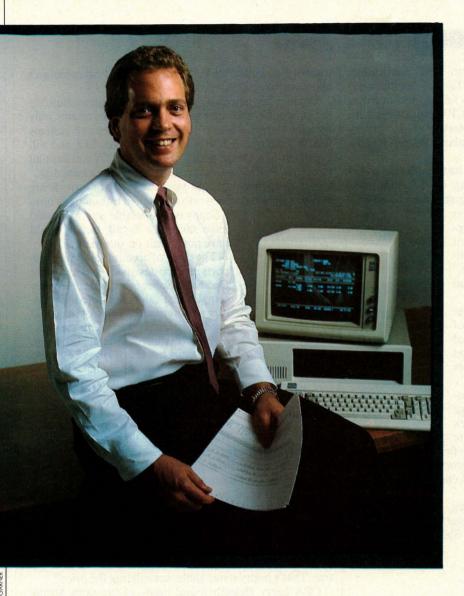
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MARK WILSON, of Dallas, Texas, whose background is system design and accounting, found a low-price accounting program to be tailor-made for a recent start-up venture. "It breaks down to a very detailed analysis of how you are spending your money," he says.

order and payroll, but it comes with a photocopied manual produced on a dot matrix printer.

The package you select today should not only be reliable for your current needs, but be able to accommodate your business as it grows, either directly or by providing a growth path toward more advanced products. An increasingly popular feature is the ability to export accounting data to spreadsheets or data bases for custom analysis.

Some of the newer, low-priced packages are surprisingly complete. They work just fine for a small business that only needs one or two applications, and other accounting operations can be installed as the business grows. But you should ensure that the software can adapt to any unusual situations.

"The things that run by the book don't give you any trouble," warns Lloyd Williams, owner of Genie House, of Medford, N.J., a million-dollar-ayear manufacturer of custom lighting fixtures. "It is the guy who returns merchandise and wants a freight allowance, and then claims he has lost the merchandise." Williams' Pearl accounting software was able to handle such problems and provide up-to-date information that permits him to use accounting services only once a year now, instead of monthly.

But even the best accounting system may leave something to be desired. Martin Gutman, secretary and owner of Decorator's Service Company in Hackensack, N.J., is about as satisfied an accounting software user as you are likely to come across. Still, he is irritated twice weekly when he produces customer invoices with his BPI system. The program processes invoices one at a time, which requires Gutman to stay with the computer during the process. "I resent

the fact that I have to spend an extra half hour tending the printer," Gutman complains. He is currently searching for a buffer solution to his minor annoyance. "I think I can find something better to do with my time." he says.

Often, problems can be traced to the inexperience of users. An accountant wouldn't even consider posting an out-of-balance batch to the general ledger, for example, so some accounting software doesn't include checks for an out-of-balance

batch. Beginning users should select software with ample error checking and user feedback to avoid mistakes caused by improper procedure.

Perhaps the most difficult part of computerizing a small business's accounting is setting up the chart of accounts during the initial installation. One of the first steps toward computerized accounting, then, is to review present procedures for accuracy and efficiency.

In the beginning, you'll have to spend extra time getting the computer ready to handle your daily accounting. The chart of accounts must be designed and, in most cases, typed into the computer. Customer information, inventory data and beginning balances must be entered before accounting can begin.

Never switch suddenly to a new accounting system. You should maintain the old system for at least a few months

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What The Accountants Said

arry Sharer's initial opinion was predictable. "They're garbage; disastrous. The documentation is awful, they are impossible to follow, and in many cases there is no real audit trail." A CPA and partner with Wagner, Kachur, and Sharer, of Marlton, N.J., this accountant was talking sight unseen about under-\$100 accounting software.

Yet one week after Sharer's firm had the chance to experiment with Dac Easy Accounting, the \$70 integrated accounting program, his opinion changed dramatically.

Sharer says now that Dac Easy is user friendly, has good technical support, good documentation—"not great, but pretty good"—and is reliable. "I was surprised and impressed," Sharer says. "Overall, the system had more than I thought it would."

Larry Helseth, a CPA and partner with Kafoury and Armstrong, of Reno, Nev., was another skeptical professional. "I first thought there was no package you could get for under \$100 that would work." he recalls.

But Helseth bought Cougar Mountain Software's ACTG-1 package "with the idea that if it doesn't work I'm only out \$99." After a complete

evaluation, he found the software "better than the ones we were paying \$2,500 for." His firm now has purchased 14 ACTG-1 packages for installation at client sites, and they probably will buy more.

Concerning Dac Easy Accounting, "I came up with quite a few pluses and not many negatives," says Sharer. Among the program's strong points, Sharer says it:

- Is easy to set up and use
- Is a fully integrated system
- Has good password protection
- Won't post out-of-balance batches
- Uses consistent display and user input
- Has flexible reporting
- Responds quickly
- Provides many extra features, including mailing labels and multiple inventory prices.

Dac Software president Kevin Howe notes that power and flexibility are two things that were designed into the software from the start. "Power, because we don't want anybody to confuse the price with the performance," Howe says. Flexibility is key to the product's survival, Howe explains. "If we have a mass-market price without a mass-market product, we're dead. We've got to make sure it can fit a whole variety of companies."

Dac Easy is missing some things that you may find in more expensive packages, however. There is very little user feedback, for one thing. When incorrect data is entered "it beeps at you and just leaves you there" to figure out what is wrong, Sharer points out. Howe admits, "That was one thing we sacrificed for our hardware requirements, getting it to run in a one-disk environment. That gave us the ability to reach those hundreds of thousands of PCjr users and small businesses that didn't have huge

memory or a hard disk. The key is, the system doesn't allow you to enter an error."

Detail is lost when an accounting period closes, limiting the program's archiving power. The system retains only account summaries and totals. More expensive systems usually keep transaction detail as long as you like, and will even post to a closed period if necessary. "If you kept all the detail, it would automatically force you to a hard disk," Howe says, "and it would slow the system down. Being able to save a month's worth of detailed transactions onto

a floppy is a preferable way. We could have saved the detail, but it would have put a limit on our market."

The chart of accounts and many reports must be designed from scratch in Dac Easy. Some other systems supply samples that can be modified for enduser requirements. "I think you would need an accountant to set up the package successfully," Sharer observes. "That's just not true," Howe counters. "I don't think we would have the success we have had if it wasn't a fairly easy package to set up and understand." Sample charts of account and reports are provided in the manual, Howe notes, but there wasn't diskette

space to provide samples for a mass market.

Although adequate audit trails are provided, "you can't get sloppy in your procedure," Sharer points out. Dac tells you when to print audit trail reports and when to make backups, but if you fail to do it, the audit trail will be broken. "That's true of every accounting system," Howe contends. "That's a criticism of computerized accounting."

Sharer says "Overall, I was impressed. Dac Easy gives you the basics, the important things, and a lot of little extras. That's pretty remarkable, considering the price."

CPA Larry Helseth found many of the same strong points in Cougar Mountain's \$99 package. "It is very powerful, well integrated, and flexible," he says.

Helseth was surprised at the quality of the software's documentation and telephone support. He says other pluses include:

- A friendly user interface with error reporting
- · A good audit trail

'I was surprised

and impressed. The

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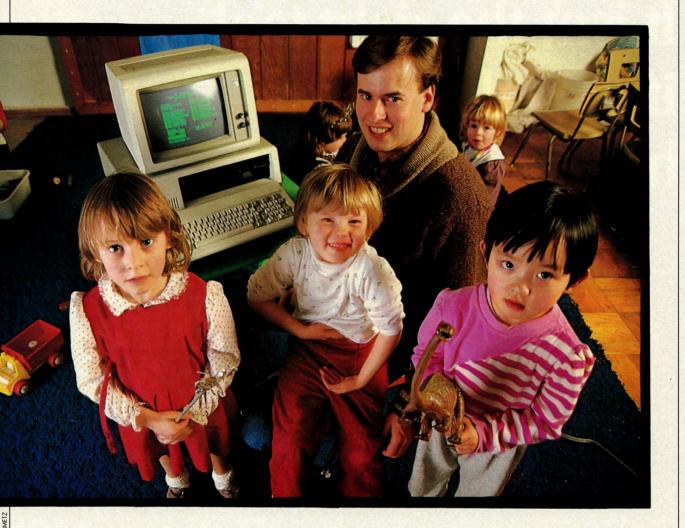
pluses and not

many negatives.

- Support for multiple companies
- Flexible budget reporting
- An account history up to 100 years
- Support for order entry and point of sale
- Compatibility with Cougar Mountain's multiuser line.

"This is powerful software," Helseth observes. "I was thoroughly impressed and surprised with it." Cougar Mountain president Bob Gossett explains: "We designed our software from the beginning for flexibility, features, and integrity." Furthermore, he adds, the company is about to release ACTG-2, a multiuser upgrade that includes all the features of the original package plus record-locking and other features for IBM's Token Ring, PC-Net2, the Novell network and others.

-T.B.



to make sure everything is running smoothly. This parallel process will mean someone must do the bookkeeping twice, but the payoff is that you can weed out trouble spots before they can do your business any damage.

Stewart Industries, a New Jersey office supply and equipment company, made the switch in just 60 days from manual accounting to a five-user integrated system running Open Systems software. "At the time of the installation, I was cursing myself," remembers Stewart vice-president Chuck Cahn. "But we have good employees and we came in nights and weekends. We were really devoted to it."

Gutman of Decorators Service took about four months to install his BPI software and another two months running parallel systems before he switched over to full-time computer accounting. That was four years ago, and the problems since then have been few.

Gutman's story is classic. His company manufactures interior design prod-

ucts such as draperies and curtains for wholesale to retailers and designers. The company employs 25 people. Four years ago, Gutman notes, "we were growing faster than our manual bookkeeping and accounting system could handle." The company saw their options as either hiring a bookkeeping employee, or buying a computer.

"We were originally interested only in billing and inventory-tracking systems," he says. At the time, the company had annual billings of only \$250,000. Gross income has since tripled. "Now we run all five BPI modules: inventory, payroll, accounts receivable, accounts payable and general ledger."

Perhaps the major productivity advantage that Gutman reaps from his computerized accounting system is speed. "It used to take a 10-hour day for me to do my payroll, government withholdings and all, accounts receivable and all check writing for a period. Now I

BRANT MYERS of Piedmont, Calif., needs financial profiles of the Circle Preschool for funding-source audits. Records used to be consistently six months old. "Now we find what we want day by day."

get it done in three hours."

Gutman also has a better picture of his company's business affairs, securing instant access to information that previously required hours of searching.

"As organized as I thought I was, I found out how little I really knew," he says now. When Gutman calls up a customer's account on the BPI system, he



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Virtually any type of business, certainly, can benefit from the ability to generate-up-to-the-minute financial profiles. The Circle Preschool in Piedmont, Calif., converted to BPI accounting six years ago to avoid potential errors and the time-consuming manual process required to provide financial records for quarterly audits by separate funding agencies. With a manual accounting system, records were always six months old, says business manager Brant Myers. "Now it is quite easy. We can find out [profile information] day by day if we really need to."

Stewart Industries' Cahn points out another important, though somewhat less tangible, benefit from his company's computer system. Now that he personally tracks receivables and payables, payroll, and detailed customer and inventory records, a slight shift in company focus is occurring.

"People are turning to me, and the computer, for this information," Cahn says. "And we can provide it quicker,

easier, and at any time of the day." An efficient and effective accounting system can do more for the bottom line than merely track and reduce expenditures. Implemented wisely, it can be a moneymaking impetus. Kaselaan and D'Angelo Associates, a New Jersey environmental consulting firm, was a company on a fast growth track when it switched to computerized accounting in 1984. "Our accounting was being done by a part-time person and the records were being carried around in a shopping bag," recalls Comptroller Roger Watts. "We didn't know who owed us, who we owed, or how much of either.'

Between November 1984, and January 1986, the firm installed eight personal computers and underwent a fourfold growth in personnel and transactions. Today, Watts spends about 50 percent of his time on accounting duties, with the help of a full-time bookkeeper, an IBM PC, and Solomon III software. "We know exactly who we owe and how much, and we're investing money that used to sit idle in receivables," Watts reports.

Many businesses report that a switch to computerized accounting has two almost immediate results. Collections on accounts receivable improve, because customers perceive that the business is more organized, on top of things, serious about its operations. And, for the same reasons—if the computer is handled carefully and professionally—customer relations often improve.

Leroy Carroll has been using BPI accounting modules on an Apple II for five years to run his California recording studio. Carroll now conducts the business accounting himself, taking about three hours a week for what used to be a full-time job. He eliminated one staff position with the package, and reduced accountant reviews from monthly to quarterly. "I know exactly where I

Many businesses
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personal computer
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two almost immediate
results. Collections on receivables
and customer
relations improve.

stand at all times," Carroll reports. Not only is Carroll in better touch with how his business is doing, but he is providing better, more timely service to his customers. "Everybody in the company gets a weekly accounts receivable ledger, so when anybody calls to find out what they owe, it is never more than five days old."

Genie House owner Lloyd Williams installed a computer with Pearl software two years ago and reports making "more money in the past two years than I had in the past 15." Williams admits that other factors contributed to this growth, but says he couldn't have kept up the pace without computerized accounting.

"We run a million-dollar-a-year business with wholesale, retail and separate manufacturing operations. We have 200 wholesale accounts, manufacture 300 different products with 20 employees, maintain a four-week shipping schedule, and operate with no inventory. We run it with two people in the office, and we know this morning who owes us, and how long they've owed us. We'll bill today what was shipped yesterday, and everything is in the bank by noon."

Williams also is able to fine-tune many aspects of his business that he

wouldn't have attempted without a computer. "I started way back with 'I collected this much and I spent that much, and I have this much left'," Williams reflects. "Now, I have a profitable business and I am down to the level of 'What are my workman's compensation costs, what are the contributions that make these costs higher or lower?" I'm using the computer to study what I can do in the way of training, and to find out how much of what kind of information I can give my foreman to help him understand how to keep workman's compensation costs lower."

Several levels of accounting software are available to help you attain this kind of business analysis. One very flexible category is the modular software approach, whereby specifically intended modules can be used alone or in almost any combination. A full accounting system built from modules generally is more expensive than a so-called integrated system, but it also may provide more flexibility. Modular software frequently offers applications such as job cost or budgeting that may not be included in integrated packages. One advantage is that a single module can be installed to fill a specific business need. Even though many integrated packages permit single-module use, a single, stand-alone module is easy to understand and use. You should make sure, however, that the modular software you purchase can be integrated later.

Integrated software acts together to give you a better overall view of your business, usually through a general ledger. The general ledger is a series of datastoring accounts that keep track of various business transactions. From the list of business activity in the general ledger, you can produce a company balance sheet, find out about net worth, check on assets, analyze all your sources of income, or plan a budget for next year. The data for these reports comes from individual accounting modules: accounts receivable, accounts payable, payroll, inventory, order entry. In an integrated system, this data is automatically posted, or moved, from the individual modules to the general ledger.

Modular systems sometimes can form integrated systems as new modules are added, but some modular systems require that you print out transactions from the various modules and enter the information by hand to a general ledger. If your business volume is very light, and you want the feeling of complete control over the accounting procedure, then stand-alone modular accounting may work for you.

Such low-priced packages as Dac Easy or Cougar Mountain ACTG-1 offer a surprising range of accounting functions at prices from \$50 to \$100. Dac Easy, for example, not only supports the usual accounting functions, but also provides budgeting, forecasting and flexible reports. The price is \$70.

ACTG-1 is notable for its support of multiple clients or businesses, long-term account history maintenance, and point of sale, in addition to the regular accounting functions.

The more traditional-minded accounting software users insist that access to source code is the only way to ensure true flexibility. These users prefer programs with a data base foundation. "This lets you add fields or change reports without an impact on the entire program," says Bob Payne, whose West Virginia-based Business Computer Service has been serving accounting clients for more than 15 years. One of his typical recommendations is SBT accounting modules, because the source code is available and the software is based on dBase II.

Computronics, of Spring Valley, N.Y., markets an open accounting system written in BASIC. The VersaBusiness Series is basically a \$99-permodule collection, although the general ledger program costs \$150. Extremely popular at least partially because it is available for virtually every well-known personal computer and operating system, the interpretive BASIC code of the VersaBusiness Series is accessible for any programmer to modify. Nonetheless, the documentation is reasonably good, the software is not particularly complex, and it is generally easy for even inexperienced users to learn and also use.

As the visibility of reasonably priced accounting for personal computers increases, many companies also are breaking new ground in software technology and user interface: the software is more compact, faster, and easier to use than software of just a few years ago. BPI Systems, for example, claims to have more than 20 megabytes of program code compressed into 3Mb of disk space. Companies are using larger avail-

With the price

of accounting software decreasing

rapidly, don't

be hasty to commis-

sion custom work.

able RAM to improve software performance and provide more user help.

Interconnect Software of Dallas recently released a package that supports general ledger, accounts receivable and payable, payroll, inventory management, and point of sale in addition to a data base management system. The accounting data is accessible through the data base manager, and the user can design non-accounting files and reports within the data base manager. The price is \$150. "Our philosophy is to give the masses a product they cannot afford at a price they can," says Interconnect Software president Bracken Cherry.

Future Computing, a research firm headquartered in Dallas, predicts that by 1990, more than 3.5 million business and accounting packages will be installed on business-class personal computers. "There are 18 million businesses that need to computerize, but haven't because of the cost associated with it, and the fear," says Kevin Howe, Dac Software president. Howe believes the price barrier has been broken, but "the smaller of the barriers is price."

When Off-The-Shelf Solutions Won't Do

espite the growth in flexible, reasonably priced accounting software, there are times when off-the-shelf applications won't fit. If your business is unique, if you require a number of unusual data associations or reports, or if you simply refuse to adapt to available packag-

es, then custom software may be the answer. However, don't be hasty to commission a custom work.

Custom-integrated software is expensive, for one thing. When the costs of design and development are spread over thousands of users, prices can be kept relatively low. When you go it alone, you pay. Depending on the application, the cost could range from \$2,000 to \$20,000 or more.

It also takes time to develop a unique application. Although a skilled user can

install a full accounting system in a few weeks, a complicated custom package could take months, or even years, to develop.

On the other hand, a simple check register or other stand-alone application could be designed in a reasonable amount of time, using a spreadsheet such as Lotus 1-2-3, or a data base system such as dBase III. Even so, beware of the pitfalls. Someone familiar with these packages could design applications fairly easily, but they would be difficult for someone without experience to use.

If you do decide on a custom application, keep these points in mind:

• Carefully check references for the company or individual doing the programming.

• Remember to consider ease of use, documentation, flexibility, support and reliability with any package you develop. These factors are even more important for custom software because there is no peer support. Yours is the only business using it, so you can't ask somebody else how

they solved problems.

 Consider modifying an existing package rather than starting from scratch. With tried software, at least the basic relationships among modules has been worked out.

• Retain at least partial rights to the finished package. If you pay to develop a custom package, you should at least get a royalty from any other sales. Many programmers attempt to retain all rights to the software they produce. If this is the case, you should get a reduced rate

on development. One common compromise is for the programmer to return a percentage of all future sales to the developer until the developer's costs are covered.

• Keep in mind other applications and software programs that are integral to your business. Any new accounting system that you develop should be able to handle importing and exporting of data easily.

• Make sure the programmer fully understands your application. One of the greatest reasons for cost overruns and dissatisfied customers is a poor understanding of what the software will do. A detailed report that describes all features, including user interface and documentation, should be produced before any software is written.

-T.B.

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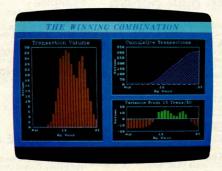
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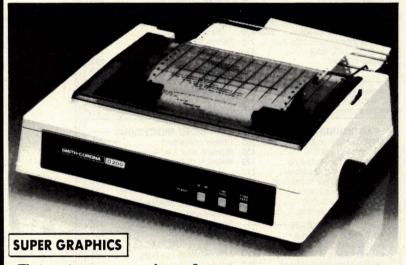
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Impact Dot Matrix

SPECIFICATIONS

Char. Matrix Size 9H x 9V (Standard) to 10H x 9V (Emphasized & Elongate)

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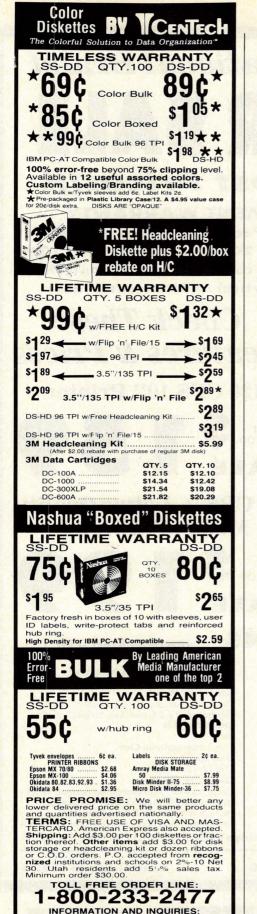
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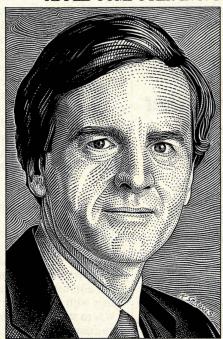
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APPLE COMPUTER INC. PRESIDENT AND CHAIRMAN



JOHN SCULLY

On Fitting Into The IBM World Of Computing

It is a significant, almost radical, philosophical change for us internally to accept that our computers have to connect to somebody else's.'

uring the first nine years of its existence, Apple Computer Inc. blazed a counterculture path at the vanguard of the personal computer industry. Founders Steve Wozniak and Steve Jobs became legends; Wozniak for engineering the Apple II and Jobs for giving the Macintosh its unusual personality.

Now in its 10th year, Apple is undergoing a transformation at the hands of its chief executive officer: president and recently

the hands of its chief executive officer: president and recently named board chairman, John Sculley. Hints of Apple's stubborn independence remain, primarily in Sculley's insistence that Apple will never succumb to pressure that would leave it as just another company that sells MS-DOS computers. Yet Sculley is a pragmatist who is forging new strategies designed to enable Apple to compete in the world of business computing.

More than two years ago, Steve Jobs persuaded Sculley to leave PepsiCo and run Apple. Sculley became president; Jobs was chairman of the board. During

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his first year, Sculley maintained a low profile. Then, following an intense, and public, dispute over the company's future, a schism rapidly widened between the two friends and colleagues. The result was Jobs' departure. Solely in the spotlight as 1986 began, Sculley ushered in Apple's Macintosh Plus and Laser-Writer Plus. In late January, Apple's board of directors cast an added vote of confidence in Sculley by naming him chairman of the board.

Sculley has tried to make amends with both of Apple's departed founders. Wozniak now serves as an Apple consultant. But Jobs seems destined to pursue another new course for himself at the helm of start-up Next Inc.

Is there truly a new era ahead for Apple, or is its past glory destined to fade into quaint memories? To find out, PERSONAL COMPUTING'S Editor-In-Chief Charles L. Martin and Executive Editor Sandra R. Reed talked with Sculley recently at Apple's headquarters.

QUESTION: You have talked about a new beginning for Apple; where is the company now and where do you see it going? SCULLEY: We see Apple being built upon three market domains: education, which is the most important for us today; the high-end consumer domain, which for us is an outgrowth of our strong position in education; and business, [where we must] really set out in 1986 and 1987 to demonstrate that Apple can be a significant player.

QUESTION: Apple's position in the market has been somewhat diminished with MS-DOS taking off as it has; what is your strategy for dealing with this?

SCULLEY: It depends on which market we're talking about. In the education market, our share has actually grown from 43 percent to 72 percent. But it's true in the business market that we have to get a clearer strategy implemented that will put Apple on the offensive. I believe that this has required some fundamental changes philosophically inside the company. These changes were, first, not to sell technology for its own sake, but to focus in on what people are going to do with computers. This means we have to be solutions-driven as well as technology-based. The second is a genuine realization that Apple would have to have very effective ways of connecting into the IBM-defined world at a systems level. When you keep in mind that Apple's roots were as a stand-alone computer built for enthusiasts and then for educators and then for small business, it is a significant, almost radical, philosophical change for us internally to accept that our computers have to connect to somebody else's. I would say Apple is becoming customer-driven and recognizing the need to be superb implementers in a systems-defined world.

QUESTION: Why do you have to fit into the whole IBM world or the MS-DOS world? Is it just for the sake of making large numbers of computers?

SCULLEY: I don't think this is much different, quite frankly, than what Apple

It's true in the business market that we have to get a clearer strategy implemented that will put Apple on the offensive.

was faced with some years ago when CP/M came out. At that time, because of the openness of the Apple II, you could put a card into it and also run CP/M. So the question of operating systems was totally transparent to end users because they could do it either way. That would be my goal with our approach to business in the future. If somebody really wants MS-DOS compatibility, there ought to be a way that they can get at it with at least one of our various workstations. But that isn't what we're selling as a reason why you ought to buy Apple. The reason why you ought to buy Apple is that we do some things distinctively well; and that starts with our human interface, and includes very high-resolution graphics-and I think there we have a tremendously powerful story.

QUESTION: Is a workstation different than a personal computer?

SCULLEY. I see a difference because workstations suggest being connected to something else or the capability of being connected. It's not a word Apple invented. But it's an important comment that you see Apple using some of the nomenclature that's out in the industry.

QUESTION: Originally, the Macintosh was

sold as an easy-to-use computer. Are you now positioning it as a powerful computer that is also easy to use?

SCULLEY: Well, the fact is that a very large amount of the power that we could offer for its price, two years ago, had to be consumed by the very sophisticated human interface that Macintosh has. That didn't leave a lot of excess power that could provide real functionality for the serious user. It also took us several years to get the business software that we needed for Macintosh, because the technology was so significantly different than any other personal computer. When we came out with the Macintosh Plus, we first said we've got to address every significant issue that has been raised about Macintosh by the so-called power users, and that meant no compromises. It meant that the power user should not have to compromise functionality in order to get the intuitive user interface that Macintosh had to offer.

QUESTION: Can you describe the power user in business?

SCULLEY: The power user in business has tended to be the person who has recognized that the personal computer can save a tremendous amount of time. Their alternatives in the past were to do things with a calculator or manually or it was to stand in queue for time on the mainframe and hope that they could get some. The serious users have included financial analysts, planners and people who wanted to be able to do a fairly heavy-duty level of computation. We think that the serious user in the future, though, is going to go beyond the person who is only interested in heavy-duty computation. The serious users in the future are going to be people interested in sharing information, accessing information, using information, putting together reports, presentations, proposals and things of this nature. There will be a somewhat changing-let's say an expanding-profile of what the serious user in business will be as we move forward.

QUESTION: The human interface has always been one of the really distinctive things about the Macintosh. Is Apple going to try to encourage a second source for the Mac or expansion of the interface?

SCULLEY: We have no plans at this time to make this something that anybody can use. We want to keep this within Apple, because we think that this is something that can be very important to our future. Therefore, our focus is on

implementing it inside and not making it available to other companies outside. We think that the human interface is going to become increasingly valuable. because as MIS people begin to go through the awesome task of implementing a computer on many hundreds, even thousands, of desk tops in large corporations as well as many desk tops in small companies, it's becoming apparent that the real cost is not the hardware or even the software. The real cost is teaching the user how to use the machine, and the support that follows up. While the human interface seems courageous today, we think it's going to be fairly obvious tomorrow.

The Macintosh human interface can be used not only as the front end to Apple's own applications, but we are demonstrating here at Apple that we put the Macintosh front end on DEC's "all in one office." We've also been putting it as a front end on our own IBM mainframe computers-there were a number of products that were demonstrated at the Apple World conference that showed just that capability. So we think that the human interface has very broad potential, not just with the standalone computer, but with an intelligent workstation as a front end to other systems.

QUESTION: Someday might we see a Mac-like front end for the IBM PC—marketed by Apple?

SCULLEY: No. We have no intention to offer Macintosh as the front end to an IBM personal computer.

QUESTION: In retrospect, did Apple make an error by not allowing compatible Macintoshes to emerge?

SCULLEY: In hindsight, Apple made an error by closing the Macintosh system. When you keep a system very open, so that other people can connect their products, either with peripheral cards or expansion accessories, it engenders a lot more support. That's the direction which we've been moving with Macintosh most recently. The Macintosh Plus is a very expandable product with a fast bus that comes out the back. You'll see us continuing to implement more and more expandability in the future. I think that was a lesson that we learned.

QUESTION: Can you tell us what will be different—evolutionary—from Apple in terms of products for the next 24 months versus the last 24?

SCULLEY: You should expect to see Apple offering a family of workstations in business, not just a single product to ad-

dress market needs as we've had in the past. You should expect to see Apple have a full offering of systems products, both hardware and software, which will allow the Macintosh workstations to connect to other shared devices, like LaserWriter printers and file servers—but also, to connect to other peoples' computers so that business people, in choosing a Macintosh, are not choosing between either the Apple technology or the IBM technology, but are really able to say for these purposes, "I think Mac-

It's becoming apparent that the real cost is not the hardware or even the software. The real cost is training the user.

intosh is better" and yet they know that it can coexist with IBM or IBM compatible computers that they might already have. Another thing that I think you should expect to see is very consistent policies and practices in terms of upgrade paths. We just announced an upgrade path for all the Macintoshes that are out there today-the 128k and 512k Macintoshes, so they can grow to become Macintosh Plus's. You should expect to see responsible policies like the ones we announced with the Lisa computer, whereby Lisa [Macintosh XL] owners can get a Macintosh Plus and a 20-megabyte hard disk, for the combined price of \$1,500.

QUESTION: Such policies are new for Apple. Will there be a consistent path for the future?

SCULLEY: Yes. If we are going to be a market-driven, technology-based company, we've got to be a lot more responsive to customer needs. In the last seven months since our reorganization, we went out and listened a lot to what business customers wanted. It is very clear that they want not just the most innovative technology, which is what Apple is prepared to offer, but they also want to know that there are clear growth paths and as they made their own plans, that

they could have a vendor whom they could trust and who wasn't going to go and switch technologies a year and a half later because something more exciting came along. This is extremely important for Apple, because once we move beyond the enthusiast, we have got to demonstrate that Apple is able to sell more than technology, we're able to sell solutions and responsibility.

QUESTION: With the track record of Apple in the past, with the Apple III and Lisa and so forth, with that behind you, how do you convince your customer that it's a new future?

SCULLEY: I think it's quite clear that we are going to earn it, not based on flashy advertising, but we are going to earn it on the basis of people having very good experiences with our products and service and support and things of this nature. So we are very conscious of this and we will be working very hard to—first of all—get the success stories that we can point to and then when we get them, to make sure that other people hear about them.

QUESTION: Can you describe your view of what a business person sitting at a workstation would be doing in the future? Don Estridge's long-term view was that the manager had to communicate. Is that a big deal?

SCULLEY: At the Apple World Conference I talked about three different markets that we were focused on in business. First was desktop productivity, which really means bringing real functionality with the advantages of graphics and our human interface to the various productivity needs in business that have already been identified-word processing, spreadsheets, data bases, communications, things of this nature. The second is desktop publishing-a new emerging market that we think is going to be very significant and may well shape the 1980s and 1990s the way xerography did in the 1960s. Desktop publishing will significantly change the way the printed page is used in business, and we intend to be a leader in that market. The third is what we call desktop communications, and desktop communications is a market that we think hasn't yet really been defined specifically, but it recognizes telecommunications and powerful desktop computing eventually coming together into a single box, whereby voice and data can be managed simultaneously. We think that as the computers become better connected to each other over the next several years, as that critical mass occurs, the

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opportunities open up for a workstation for the busy business executive. This executive may not know much about technology, but knows a lot about information and making decisions. The importance of a Macintosh as a communications workstation is going to become tremendously vital.

I think we are going to see the emergence of a new kind of person who will sit in front of the workstation of the future, and that's going to be the information user. Up until now, we've largely been addressing ourselves to the information providers, the people who have to create the information for other people. Now we are going to start seeing information users, and it seems to me somewhat ridiculous to expect someone to become a computer expert before he or she can become an information user. The fact is, these people are already information users. It is because they would like to be able to use information more easily that the human interface on a powerful desktop communications workstation has tremendous potential.

QUESTION: Is that Apple's edge then, the human interface? In some other areas, the likes of Xerox are bound to do something in terms of desktop publishing.

SCULLEY: I hope that's exactly what does happen. I hope that Xerox and IBM and anybody else who is interested decides that desktop publishing is as important as we think it is, because that shifts the design center for what computers should be able to do well away from its total dependency on computation of numbers and over toward some of the solutions that Apple does superbly well. If that happens, then I think we have gone a long way toward winning the battle, because now we're playing in our own field, we're not playing in somebody else's. The fact is that we have the best human interface, we have the best implementation of graphics with the LaserWriter, we have probably the best economies of scale in terms of manufacturing those types of products. For several years, we will remain further out than anybody else is in terms of developing software that will take advantage of these technologies. From my standpoint, I don't look at that as awesome competition, I would look at that as probably the best thing that could possibly happen because it would increase the recognition that this is more than just a niche, but it really is something that is going to be pervasive.

QUESTION: With Steve Jobs gone, does the company have a new visionary?

sculley: We have to talk about what kinds of visions. If you mean a vision of where our company is going, I think I stated it very clearly. If it's a vision about technologies, some of the best things that Apple has done go back to visions that predate the founding of Apple by more than a full decade. We're fortunate that we have Alan Kay [an "Apple Fellow"—someone who, according to Apple, "works independently on state-of-the-art projects of his or her own choosing"] at Apple. Many of his

6 Desktop publishing is an emerging market that may well shape the 1980s and the 1990s the way xerography did the 1960s. 9

concepts of the computer as a symbolic processor led to a whole future series of computers that use graphics and very friendly user interfaces. These are things that we were able to successfully implement with the Lisa and the Macintosh technology. That's a path that we intend to continue well into the 1990s, because we think that hasn't even begun to be tapped yet. So we have a commitment to the visions that have been around for a long time. The big difference is that we have a vision for the company, not just a vision for the technology. The vision for the company embraces the customer and embraces markets that obviously are inclusive of technology. But it goes beyond just making technology exciting. We also will be able to demonstrate over the next several years that Apple is fully capable of turning out very exciting products that are based upon new technologies that other people aren't following. By this I mean that Apple is firmly committed to be the alternative technology company to IBM.

This is not a criticism of IBM. It's a recognition that there has to be room for alternative visions of what a computer can be. Our vision starts with people and it extends to products and technologies that leverage the way people

can interact with computers, the way people will use computers as workstations when they are connected in very complex systems, the way people will use workstations when there are vast amounts of information services that will have to be accessible. These are things that go beyond Apple's original vision. The original vision of Apple was one person, one computer; an incredible statement, because up until then. nobody had ever thought of one person at one computer. But the vision didn't include that one person might want to be connected to a lot of other people. It's the complexity of a systems idea that expands that vision beyond what it had been in the past. You should expect to see from Apple in the future a very robust, rich implementation of the computer as a stand-alone workstation, but also as a connectable workstation-connectivity within the bounds of a human interface and graphics.

QUESTION: But still one person, one computer?

SCULLEY: One person, one computer, but elegantly and transparently connected to the rest of the world.

QUESTION: You recently said that Apple did not want to become one more MS-DOS-only company. Does that mean that Apple wouldn't consider an MS-DOS-based computer?

SCULLEY: You can interpret that to mean that Apple has no interest in taking an MS-DOS machine and slapping an Apple logo on it and saying now it's from Apple. That does not mean that we will close ourselves out from giving people options, anymore than we closed ourselves out from CP/M. You should expect to see us work very proactively to develop bridges into the MS-DOS world so that we can eventually share floppy disks at the data file level, so that we can even eventually run MS-DOS software as an option with a coprocessor card in some future machine.

QUESTION: What do you personally do on your Mac?

SCULLEY: I do most of my work at home and the first thing I do in the morning is connect through Apple Link into all the available technology news and telecommunications news and corporate news that's available. I go through all of that by 6:30 a.m. It doesn't take that long because Apple Link is really simple. All of the speeches that I did at Apple World I wrote myself using MacWrite. I do a great deal in the graphics area. One of my particular interests is in architectur-

al engineering, so I experiment.

QUESTION: It appears that IBM is walking away with the market. Their market share just keeps growing incredibly. Does Apple have time to catch up?

SCULLEY: I think that we have to really have perspective of what this industry is going to be, and not just what it is today. If the industry were only as broad as what it's been, then I'd say that it would be very hard. But I believe that we've only just begun to see the use of a personal computer in business; and if this is correct, we're going to see segments of the market emerging that didn't even exist six months or a year ago. Desktop publishing is a good example. Desktop communications is another. If these markets really do emerge the way I believe they will, then I think Apple is going to be able to demonstrate that it can very much be a serious player in the business market. If it's just a defined market for computer experts and nobody cares about the machines being easier to train users on, or they don't care about integrating graphics with computers, or about people connected to each other in a work group or connected to other computers remotely, then it would be very hard for anybody but IBM to succeed. But I don't believe that at all. If I did, we wouldn't be committing as much of our resources and making so many strategic decisions to focus on the business market. I'm tremendously optimistic about the outlook in business because I think that the technologies were right, I think that much of the vision was right. The problem was that the vision didn't go far enough and Apple got too caught up with making the technology exciting and didn't understand that you had to commercialize it and implement it. I think that's not surprising in hindsight because Apple is a very young company. The people at Apple could understand how the enthusiasts thought-many of us were enthusiasts-we could understand how the education market thought-many of us just got out of school a few years ago. But a lot of people couldn't understand how business people thought, because they had never worked in any business other than Apple. So there was a blind spot there. My goal was to open the light to the blind spot and demonstrate that we can be as good at implementation as we were in conceptualizing the potential for computers in the first place.

QUESTION: For business, don't you have to sell Apple—the company—as much as

you have to sell Apple—the product? Isn't that what you're up against with IBM? SCULLEY: Absolutely, and the problem that we have is that many people don't think of Apple in the office—they think of Apple in the school or Apple in the home. There is a real challenge for us to demonstrate that Apple should be taken just as seriously in business. As I said, this cannot be done with flashy advertising. It's got to be done by developing a level of trust that our products are better for the things for which we are propos-

We've got to go beyond the metaphor of the garage and think in terms of how computers are really going to change people's lives.

ing them, that we're solutions-driven and that there are other people out there who are using our products and having a great deal of success for exactly the reasons that we chose the alternative technology.

QUESTION: Will the Apple II ultimately become part of a Macintosh family?

SCULLEY: No, we are going to continue to have two different operating systems with two different architectures for the products. But you will see some tremendously exciting things from us in the Apple II. Many people thought that the Apple II was going to be severely hurt by Commodore's Amiga and Atari's 520ST. I think what we've learned is that the Apple II is a very strong product in terms of loyalty and the amount of software and the positions it has in its respective markets. The Apple II, with the developments that we have going on in 1986, is going to substantially increase its following from the third-party development community, because we intend to offer a very exciting growth path for Apple II owners that will take full advantage of the new technologies, such as CD [compact disk] players and things of that sort, coming along in the future. On the other hand, you should expect to see the Apple II take on many

of best features of the Macintosh technology. For example, we brought the 3.5-inch disk drive to the Apple II last September. We are bringing the Macintosh human interface on for the Apple II, and more and more of the software will be mouse-based software. You'll also see us bring more high-resolution graphics over to the Apple II.

QUESTION: What do you say to any of the 200,000 PERSONAL COMPUTING readers who own Apples now to stop them from switching to an MS-DOS computer? SCULLEY: Well I think that the actions that we're taking are going to say more than anything that I could say in words. Apple is a very financially strong, organizationally strong and technologically strong corporation today—the strongest we've ever been. Our commitment to new product development is the strongest it's ever been, and we've never been in a better position to implement that. The steps that we're taking with new product development are ones that recognize the value of the installed base. We're putting into place policies and strategies that give people a way to continue to grow as Apple's technology grows. We are firmly committed to both the Macintosh technology and to the Apple II technology. We're not going to abandon either one. I think that all of those actions will be strong confidence builders for anyone who already has an Apple computer and who chose Apple in the first place because he or she knew there were things that we could do that couldn't be done on other computers. Nothing is more important in this industry than good word of mouth. When people talk about Apple in 1986, a lot of the talk is going to be focused around the things that are happening in a very positive way at Apple.

QUESTION: In the future, when someone writes about your mark on Apple, what do you hope will be said?

SCULLEY: My goal is to make Apple the most exciting market-driven technology corporation in the world in the 1990s. To do that in an industry as big as this one, we have to operate it with a perspective that recognizes an incredibly complex competitive world, and that Apple will be increasingly a much larger company. We've got to go beyond the metaphor of the garage, and we've got to think in terms of how computers are really going to change people's lives in a world where the computer will be as common a product as the telephone is today. The complexity of implementing that is going to be awesome.

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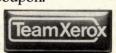
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checker for use with its Write module. Users can check the word the cursor is on, a portion of a file or the entire document. The speller contains an 80,000 word list, which can be expanded. [Registered owners of Q&A should receive a copy of the speller at no cost. It shipped in January.]

Q&A has a wide range of programming functions: from simple, such as stamping a form with the date and time; to complex, like going to look up tables to find what Part #12186 costs, or restricting what can be entered in a given field, or if/then directions. We found one quirk while trying to calculate a field from two others relating to times: If you've defined a field as time, Q&A won't let you enter seconds, only minutes and hours.

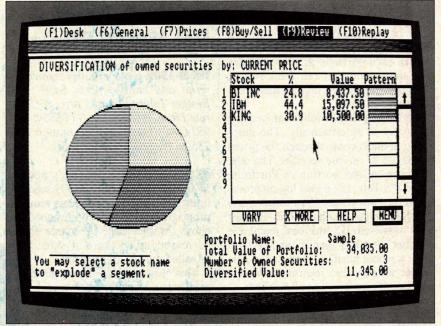
The real fun comes after you've entered data in the forms and are working with the natural language interface to make sense of it. On a two-floppy system, the Intelligent Assistant takes its time in answering queries; on a computer with a hard disk, elapsed time drops considerably. Still, the Intelligent Assistant won't be anything close to fast unless you're working with a data base of a dozen or so forms. But watching it work is part of the fun. Will it understand "Who are the big spenders?" Yes, if you've taught it that you think a big spender is someone whose department is 15 percent or more above budget for the past two quarters, for example.

Teaching the Intelligent Assistant to understand your vocabulary isn't a major task once you figure out which descriptive words are adjectives and which are adverbs. In addition to "Ask me to do something," its menu includes "Get acquainted" and "Teach me about your data base." Getting acquainted is when you tell the natural language interface about the overall concepts of your data base. Teaching involves filling in blanks (such as adjectives and verbs) about each field.

Once you and the Intelligent Assistant have reached an understanding on vocabulary, you can ask questions about the data in your own words. As it digests the question you type into a box at the top of the screen, Q&A highlights its progress and then asks you to confirm what you want before it proceeds and fills your request.

This process may sound time-consuming, and it can be. But the reward is being able to customize software so that it is truly yours.

-Sandra R. Reed



A portfolio is broken out as a table and pie chart. GEM scroll bars are on right side.

Full-Featured Portfolio Management

PORTFOLIO runs on the IBM Personal Computer or true compatibles with 512k of RAM; \$249.95 retail; Batteries Included, 30 Mural Street, Richmond Hill, Ontario, Canada L4B 1B5; (416) 881-9814 (For more information circle 186 on the reader service card).

anaging a diversified portfolio of securities investments can be very difficult. You have to stay on top of price changes and be able to evaluate your portfolio quickly; you have to see where the strengths and weaknesses are, where you're too heavily invested, and what and when to sell. All of this is made much easier with the Portfolio program from Batteries Included. Not only can you keep records of every purchase and sale you make, in as many portfolios as you wish to set up, but all the price updates to your portfolios will be done for you automatically and the program will match groups of securities when you get ready to sell. You also can graph your portfolios by value and diversification, set alerts for upper and lower limits on an investment, do automatic currency conversions, get a full range of reports on your portfolios and generate suggestions on what to sell to

Portfolio is actually three programs in

one: the GEM operating environment with a memo pad, calendar and links to the other programs; the portfolio management program; and a telecommunications program. The first evidence of the GEM environment is in the calendar and memo screen that comes up after entering the portfolio package. On the left side of the screen is a calendar and on the right side are icons, which represent the portfolio, communications and utilities functions in the program. Performing any function in the program is done with a pointer that is moved around the screen with a mouse or the arrow keys on the keyboard. To enter the portfolio function, for example, you would move the pointer to that icon and "click" on it (using the Home key if you don't have a mouse).

nce you are in the portfolio section of the program, there will be a line of menu headings across the top of the screen. By placing the pointer on any of these headings, a menu will drop down with all the options available. This is pure GEM in format, and makes getting around the program a breeze. If you've clicked on the General menu heading and then the Select Portfolio option, a screen will appear with all your portfolios listed on the left side in a box; on the right side, there is a box for currency conversions. The currency conversion feature is one of the impressive extras in this program. With it, you can instantly convert a portfolio of foreign investments according to the currency rate.

Updating your portfolios can be done manually or automatically. The automatic updates come through the prices broadcast by on-line services. The telecommunications portion of Portfolio, called I*S Talk, has preset log-on procedures for Dow Jones, CompuServe and The Source. All you have to do is enter your password, ID and local telephone number. You can specify whether you want a whole portfolio updated, a particular security that you may hold in a number of portfolios, or all holdings.

Automatic updating of portfolios is initiated in the portfolio section of the program, although the telecommunications part of the program is used to carry it out. But you can enter the telecommunications program directly from the Bridge menu, upload or download files and connect to other on-line services. Talk is a complete telecommunications program that offers you three levels of user-definable macros and also has a 50,000 word memory-resident spelling checker to use when you're creating text.

Another extra in Portfolio is the To Raise Money feature. It will suggest a combination of securities to sell in order to raise a specified amount of money. You enter the sum and then select one of two selling strategies—one to realize the optimal tax advantage, the other to maintain your portfolio's diversification.

As would be expected in a portfolio management program, you can see gains and losses in dollars or as a percentage of value, among other ways.

Portfolio is a very complete investment management package. Having it constructed around the GEM environment also makes it extremely easy to use. And a lot of thought has gone into the extras, from the currency conversion feature to the calendar and memo pad, the spelling checker and a replay function that lets you create whole macro routines to automate any function you carry out on a regular basis. To make Portfolio even more alluring a purchase, the price has been kept relatively low.

-Henry Fersko-Weiss

Brother's Sleek Dot Matrix Printer

THE M-1509 is a dot matrix printer with serial and parallel ports; \$499 retail, Brother International Corp., 8 Corporate Place, Piscataway, NJ 08854; (201) 981-0300 (For more information circle 185 on the reader service card).

omehow, to call Brother's new dot matrix printer the M-1509 seems an injustice—Desk Hugger seems more appropriate for this sleekly designed machine. At the least, the name should be revved up; perhaps it should

be revved up; perhaps it should be called the LX-1509 Turbo.

This low-profile, 136-column printer is a visual grabber in comparison to its bulky 136-column counterparts. The printer is 19-inches wide and 9-inches deep (nearly 11.5-inches deep with the tractor feed attached). Best of all, it's only 2.5-inches high across most of the cover, although it does rise slightly higher by the platen. Despite this trim appearance, the M-1509 weighs nearly 15 pounds.

Of course, looks aren't everything. The most important considerations are how easy, how well and how fast the M-1509 handles your print needs. Here we found the printer's beauty to be skin deep. That's not to say it isn't an adequate printer, but it doesn't distance itself from the features of other dot matrix printers.

The 1509 gets passing marks for ease of use. On the plus side, it comes ready for any contingency with both parallel and serial connections. The controls you'll need for everyday printing tasks are in a status box on the left top corner of the printer. The box contains buttons for line feed and top-of-form commands, for near-letter-quality (NLQ) print, and for the paper feed being used—cut sheet, form feed or sheet feed. There is a knob on the left side with four different settings for changing the space between the print head and the platen in case you're using thick paper or carbons. The on/off switch is within easy reach on the right top corner of the printer. Brother positioned the serial and parallel ports and the power socket on the side of the printer so the cables won't interfere with the paper flow. It's a simple but important design improvement over most printers.

On the minus side, it is difficult to lift the printer cover. You have to pull out

narrow indents in the side of the cover. This problem is compounded by the fact that the smoked glass covering the platen does not lift up, forcing you to remove the cover when threading paper through the platen or checking the paper position. The knob that adjusts the ribbon is easily reached on the printer's cover but is hard to turn. The power cord trails from the right side of the plug, making it cumbersome to position the cord to the left or straight ahead. And the cord partially blocks the port for the optional cutsheet feeder. The three sets of DIP switches—which set the parallel or serial transmission, the print mode and other features—are also inconveniently placed



The M-1509 has ports along its sides so cables do not interfere with the flow of paper.

on the printer's circuit board beneath the timing belt.

The machine's output is standard dot matrix fare: faint in the draft mode and not really suitable for printing anything but basic interoffice or personal work. The quality improves considerably in the NLQ mode, however. Characters are much darker and more defined, but are still obviously the product of a dot matrix printer.

How fast is the M-1509? Not as fast as advertised, but that's nothing new with printers. The listed print speed is 180 characters per second in draft mode, but that speed was determined by typing one character across the length of a line and then averaging it out to a characters per second figure. We created a 6,600 character sample file and found that it took 71 seconds to print—a speed of approximately 93 characters per second. It took four minutes and 29 seconds to print the same document in NLQ mode—a print speed of 24 characters per second.

All things considered, the 1509 comes off as a well conceived, not perfectly executed, yet sturdy printer of about average speed. It may not stack up as a bargain at \$499, although it sure looks racy.

-Patrick Honan

JONAT



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Financial Planning The Porter Way

SYLVIA PORTER'S PERSONAL FINANCIAL PLANNER runs on the IBM Personal Computer and compatibles, the Apple IIe and IIc (a Macintosh version is expected this spring) and the Commodore 128; \$129.95 retail; Timeworks Inc., 444 Lake Cook Rd., Deerfield, IL 60015; (312) 948-9200 (For more information circle 181 on the reader service card).

Sylvia Porter's program is a fundamental approach to personal financial planning. If you're interested in gaining a basic overview of income and expenses; tracking how close you come to budget projections; maintaining an inventory of your assets and liabilities; and performing some essential goal analyses, then this is a good program. But if you are interested in a sophisticated approach to personal finance, one that incorporates a full repertoire of portfolio tracking, tax planning, reporting and graphing features, then this program is not for you—not yet, anyway.

Financial Planner is the first in what will be a linked series of personal finance programs. The second package in the series—due out this year—is Your Personal Investment Manager. That next program will automate investment tracking and fill an important hole in Financial Planner. Plans for the rest of the series, at least for the time being, include a better program that covers strategies and tactics of investing.

While Financial Planner is limited to the basics of income and expenses, to its credit, it offers very clear, well organized screens and is easy to use. Take the Transaction management portion of the program as an example. After you have established your checking, savings and charge accounts, you can move on to entering checkbook, savings, cash or credit card transactions.

The screen that comes up for adding records is split into two main areas. The top half of the screen shows the last five transactions you made. You see the account that was involved, the check or reference number of the transaction, the date, payee or description, the amount and the balance. The sixth record line shows the transaction you are currently adding. Below this is a form you fill in to enter the transaction information. The amount of the deposit or check can be split into six parts, each indexed for a different budget category.

02/14/	(89							PF	IGE IN
									BJECTIVES
	GOAL NI	IMBER							PER/YR
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1985	1,458	563	246	/ G00	2,355	534	C 7/22		DO DE .
1986	1,458		246				B,300		20,256
1987	1,458		246		2,355	534 534			20,256
1988	1,458		246	6.800	2,355	534	8,300		20,256
1990	11450	563	246				8,300		10,567
1991		563	246				8,300		
1992		563	246						9,109
1993.		563	246				8,300		
1994		203	246				8,300		9,109 8,546
1995			246				8,300		8,546
1996			246				8,300		B,546
1997			246				8,300		8,546
1998			246				8,300		B,546
1999			246				8.300		
2000							8,300		8,300
2001							8,300		8,300
2002							8,300		8,300
2003							8,300		8.300
2004							8,300		8,300
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The screen shows a year-by-year report on what you must save to meet financial goals.

The only awkward part of entering transactions is having to consult the manual for the budget categories and their corresponding index numbers. This slows down what is otherwise a simple and fast procedure. You can, of course, change the budget categories already set up in the program and add a few here and there, but most areas are covered.

With Financial Planner, budgeting and keeping track of your assets and liabilities are very straightforward activities. Here again, the screens are well organized, and give a clear picture of your finances. You can also see your actual expenditures, compared to projections you made, in a very simple bar graph or X-chart. And you can view your budget by month or by category.

Other basic functions the program carries out include income and expense statements and balance sheet statements. The income and expense statement looks at the facts as you have entered them in the transaction and budget sections of the program. It is a way to see at a glance if your income is meeting, exceeding or failing to meet your expenses. The balance sheet statement shows your current net worth, generated from information entered in the transaction, and asset and liability sections of the program.

Perhaps the most outstanding feature of the program is the capability for producing reports that show whether or not you can achieve your financial goals. While the reports are very basic, taking into account your income, expenditures, assets and liabilities and then adjusting them to forecasts of inflation and return on investments, they are a good way to see your finances in the broad view. This part of the program comes with five built-in forms representing different goals: a college education, a house, starting a business, saving for retirement and other. To see what it will take to accomplish your goals in these areas, you will have to have entered a budget for at least a year, listed all assets and liabilities and recorded all transaction accounts.

The reports you produce in the end show you your current income and expenses, your current assets and liabilities, your financial objectives listed chronologically and by priority, the amounts you must save each year for each objective and then a year-by-year breakdown. If you can't meet all your objectives, you will get a warning statement at the end of your reports.

Sylvia Porter's Financial Planner is certainly not the most complete personal finance program available. But it does a good job handling the basics of your financial activities and monitoring your adherence to a budget. Plus, it helps you judge whether you can meet your financial goals. One benefit of the program is that it makes you think concretely about your financial goals. When the other programs in the series are available, the series may serve your financial needs more completely.

-Henry Fersko-Weiss

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Michael Fischer, Columnist, Bay Area Computer Currents. Author, 65816 Assembly Language Programming, 1986, Osborne McGraw-Hill.

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Roadrunner Modem

IRMA'S FASTLINK plug-in modem card and Crosstalk-Fast software work with the IBM PC, XT, AT and compatibles; \$1,995 retail; Digital Communications Associates, 1000 Alderman Drive, Alpheretta, GA 30201; (404) 442-4000. (For more information circle 176 on the reader service card).

Just when you thought it was safe to buy the raciest communications device around, a 2400 bits-per-second (bps) modem, along comes a modem called Irma's Fastlink from Digital Communications Associates. At transfer speeds that can approach 10,000 bps. Irma's Fastlink overwhelms con-

ventional modems at every turn. It is the fastest, costliest, most reliable, and most complex telecommunicator you can buy for a personal computer.

Irma's Fastlink—named for the company's hardware line of Irma micro-to-mainframe products—comes in two designs. The plug-in modem card (\$1,995) slips into any expansion slot of an IBM or compatible personal computer. The external,

stand-alone Fastlink unit (\$2,395) can, theoretically, function with any computer that has an RS-232 serial interface and software to support the high speeds of Fastlink, Our review model, the plugin card modem, worked well with an IBM PC, a Compaq portable, and a Tandy 3000-an AT-compatible. A special version of the popular Crosstalk communications software called Crosstalk-Fast is included with the modem card; the same software is an option with the external Fastlink unit. You'll need Crosstalk-Fast in either case, because no other popular communications software yet fully supports the sophisticated Fastlink modems.

Fastlink, up front, is neither for the weak-hearted nor the shallow-pocketed. Rather, it confirms what veteran users know and many would-be communicators suspect: computer-to-computer telecommunication can be difficult and expensive. Without prior modem and Crosstalk experience, you have a fair struggle in front of you with Fastlink. And Fastlink's steep ticket may dissuade you further, especially when you

discover that you need at least two such modems (one at each end of the phone line) to reap the benefits of high-speed transmissions. But Fastlink lures the cagey and wary alike with consistently perfect data transfer at a pace that can cut the amount of time you spend on the telephone line, as well as your costs, dramatically.

Installing the Fastlink modem is not difficult. The card plugs into any full-length slot. Standard phone wire, from the jack and a telephone if you wish, snaps into the connectors at the rear of the card. You may have to reposition two jumpers on the card to indicate which communications port (COM1 through COM4) you're using. There are no tiny (DIP) switches to be set. Getting up to speed with Crosstalk is considerably harder, particularly if it's your first

Irma's Fastlink can transfer files at speeds nearing 10,000 bps.

encounter with computer telecommunications, since it is a powerful program with some rough edges.

If a modem's merit is measured solely in the speed and accuracy of its direct file transfers, then Fastlink is easily the best modem around. When paired with another Fastlink modem, it sent and received our files-large, small, text, pictures, program code, or whatever-at anywhere from 6000 to 9000 bps. Translation: about 600 to 900 characters per second. Such numbers fall short of Fastlink's claimed speed of 10,000plus bps, but they are remarkable nonetheless when compared to the 300, 1200 and even 2400 bps modems that populate most offices today. What's more, almost all of our testing was performed under less than ideal conditions: Files were transferred over long-distance lines with frequently subpar phone line quality. Under similar duress, most modems will either halve their modest transfer speed or hang up altogether. Fastlink's penchant for perfection is just as impressive. The files we sent and received, without exception, were all complete and absolutely free of errors.

The advantages of accurate, highspeed file transfers are plain. You spend less time sending and resending information, while your phone line charges drop precipitously. Given the high cost of daytime access to the phone lines, Fastlink's overdrive may make your initial investment of time and money in the product pay off nicely. The more often vou transfer files between two fixed locations, and the larger those files are, the greater return you can then expect from a pair (or more) of Fastlink modems. However, if you use your modem infrequently, transfer files between varying locations or pull information from most any data bank, Dow Jones and The Source included, well. then, hold the phone.

Fastlink does do an admirable job of

working with the accepted, if slower, standards of today's telecommunications. It can readily mimic and thereby communicate with most 300-bps (Bell 103 type) and 1200-bps (Bell 212A) modems, including those from Hayes and others that speak Hayes's language. Because it is compatible with the likes of a Hayes 1200, Fastlink accesses information services such as The Source, CompuServe and Dow Jones.

But in order to communicate with standard modems, and with most of the on-line services, Fastlink has to gear down to 300 or 1200 bps. There is, in other words, no real advantage—and a significant cost disadvantage—in having a Fastlink modem unless there's a Fastlink modem at the other end of your connection. (A modem called Trailblazer, from Telebit Corp., suffices for a Fastlink, since it's the same product under a different name.)

Fastlink does not yet have the capability to communicate with 2400-bps modems, but DCA promises an enhanced version of the product (as well as upgrades for current owners) to fill in that gap.

For now, Fastlink is an efficient, costeffective solution to a specific problem: the drag of regular file-transfer between fixed locations with a conventional modem. Those who need the sparkling on-line performance of a Fastlink for other activities, it appears, will have to wait and see if the rest of the modem world decides to catch up.

-Christopher O'Malley



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Integrated And Automated Telecommunications

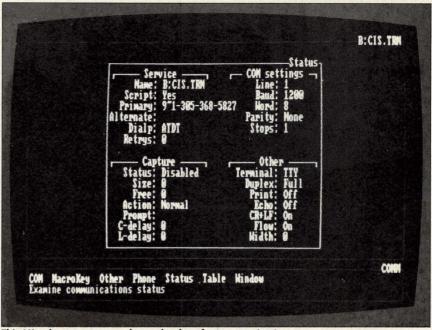
MIRACLE runs on the IBM Personal Computer and compatibles; requires 256k RAM and a color board for graphics; \$299 retail; Micro-Systems Software, Inc., 4301-18 Oak Circle, Boca Raton, FL 33431; (305) 391-5033 (For more information circle 189 on the reader service card).

e've had integrated packages built around spreadsheets and others oriented around data bases. Now, we have one built around telecommunications. With Miracle, you can gain access to information in remote data services or corporate mainframes. This information can then be placed in the package's spreadsheet, graphed for presentation and merged with a text report from a built-in word processor. What makes Miracle almost live up to its name is its agenda feature, which allows all its other features to be used automatically-like using macros. Only, with Miracle you can build a series of routines 32k long-that's something on the order of 1,000 lines.

Miracle is intended for people who have to communicate with remote locations frequently: investors who need current or historical stock or commodity quotations, managers who must access a mainframe to get corporate financial data, researchers who need to search through electronic stores of broad economic data or magazine and newspaper articles, and so on.

You get into the communications function of Miracle by choosing it from the operations menu (F1 key). All the previous communication files are immediately displayed. Miracle comes with four built-in files: one to access Dow Jones's stock quotations; and the others to access CompuServe, The Source's Unistox options service and a test bulletin board maintained by Miracle's creators, Micro-Systems. The only thing you have to add to these files is your ID, password and the local access telephone number. A host of other settings for the service, communication parameters, and data capture are already embedded in these existing files. You can see them by calling up a status screen. The status screen is also used to create new communications files by filling in the blanks.

Working in the communications



This Miracle status screen shows the data for communicating to a remote computer.

mode is very simple, as it is in all the other modes in the package. Operations are chosen from a command menu at the bottom of the screen. The command menu changes as you make selections—branching deeper into the program.

Any communications procedure can be automated, from receiving data to sending an electronic mail message. By choosing the "macrokeys" command from within a specific communications file, you can record responses to screen prompts sent by an outside service or a remote mainframe. You can also create "script" files which automatically log-on to a service and then search and capture the data you need.

Even more complicated procedures involving all of Miracle's functions can be automated, and this is where the real power of the program resides. By using the Procedural Activities Language (PAL), you can automatically move data captured through a communications routine and move it into a spreadsheet. selecting the data you want as the procedure runs. With the agenda feature, you can then graph any segment of data in the spreadsheet, merge it with a report prepared by the built-in word processor, and then send it on to a remote computer. All of this can be done in the wee hours of the night when access rates are much cheaper and you are at home.

An agenda can have "script" files associated with it. Script files are created by using Miracle's word processing feature or by using the "learn" mode in the communications part of the program. While

in the learn mode, you use the F8 and F9 keys to build a script file from prompts given by an on-line system, while you are connected to a remote computer. When you exit the learn mode, the script file is saved for future use. Once written, a script file can be edited in the word processing part of Miracle.

The spreadsheet function in Miracle allows for 256 rows and 64 columns. As many as four spreadsheets can operate concurrently through screen windows, link with each other in a 3-dimensional configuration (256 rows, by 64 columns, by 4 pages), or address each other as "tiles" of a larger spreadsheet (256 by 256, 512 by 128, or 1024 by 64). Each of the linked spreadsheets can be triggered by using the Miracle's agenda feature.

The spreadsheet function also offers advanced mathematical, trigonometric, statistical, financial, logical and date calculations. Miracle will load existing spreadsheets in Lotus 1-2-3, Multiplan, SuperCalc3, VisiCalc, Ability, DIF and SYLK formats once they've been converted to Miracle's format through a utility package called Spreadsheet Interchange Program (SIP), also from Micro-Systems (\$79.95 retail). Naturally, using the same utility, Miracle spreadsheets can be converted into any of the supported formats, for transfer to people who use only that spreadsheet.

The graphics feature of Miracle is linked to the spreadsheet function, but stored graphs can also be quickly accessed in a separate graph mode. The

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Števe Wozniak calls it revolutionary, adding "If I had thought of the SwyftCard while creating the Apple II, I would have built it in." Fomenting revolutions comes naturally to SwyftCard inventor Jef Raskin, whose previous efforts to make computers simple and useful include creating the Macintosh™ project at Apple.



SwyftCard creator Jef Raskin and Apple II creator Steve Wozniak

SwyftCard transforms the Apple IIe into the computer it ought to be.

The SwyftCard creates a 40K-byte working space, or "universe," capable of holding about 20 pages of single-spaced text. The universe accepts whatever you put in — text, numbers and data, in any form you choose, without you having to switch programs or modes.

Throughout your workday, you can enter information into the universe in free form: a report, names and addresses, daily to-do list, new telephone numbers, client list — anything you're working on.

A universe resides in memory while you are using it, and when you are done you save it to a disk. An unlimited number of universes can be created, each kept on a separate disk.

The secret to working in a SwyftCard universe is the patent-pending cursor. It works faster than control keys or a mouse, and doesn't make you take your hands off the keyboard.

SwyftCard is a better solution to your day in, day out word processing and data management needs. It is faster, easier and more useful.

How much faster is SwyftCard?

From a power-off start, SwyftCard loads a universe and displays exactly where you were last working in just six seconds, automatically, with no commands.

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How much easier is SwyftCard?

For all it does, SwyftCard uses only seven commands. And each is available immediately by pressing a single key once.

To start using SwyftCard, simply plug the card into Slot 3 (which most other cards can't use), turn the Apple IIe power on, wait six seconds and begin typing.

To use an Apple program, just load it in; SwyftCard turns itself off and won't interfere.

How much more does SwyftCard do?

SwyftCard communicates with data services without you having to learn their editors, and lets you directly edit information you bring in without special commands or file transfers.

SwyftCard is great with numbers, performing calculations — including scientific work — anywhere in your

universe

Using the SwyftCard-ProDos utility disk, which is included, you can transfer information developed in SwyftCard to other programs, and vice versa.

SwyftCard is not a spreadsheet, nor will it do everything for everybody. But no other system delivers the common sense utility of SwyftCard.

Of course, SwyftCard comes with a complete manual and an on-screen tutorial

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Computer system requirements

Apple IIe, regular or extended 80-column card, 80-column monitor, one disk drive with controller. For communications: 300 or 1200 baud modems and Super Serial card. To transfer data between SwyftCard and Apple programs with ProDos utility: extended 80-column card or two drives. To print: any Apple, Brother, C.Itoh, Centronics, Epson, HP, NEC, Okidata, Panasonic, Qume, Star, Toshiba and most other printers.

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PRODUCT REVIEWS

graph offerings include pie charts, line charts, 2- and 3-dimensional bar graphs, area and X/Y graphs, as well as special graphs for investors showing the high, low and close of securities. Two different color palettes are available on color monitors. Once a graph has been drawn by Miracle, you can recast it in any of the other graph types almost instantly. The only problem we encountered with the graphing feature was with the 3-dimensional bar graph. If the graph is drawn with labels at the top of the bar, they may be covered over by succeeding bars (if they are taller).

The word processing feature in Miracle is powerful enough to produce most any kind of business document from memos to complex reports that can be merged with columnar spreadsheet data and graphics. All the usual word processing abilities are there: boldface, underline, centering, insert and delete, block move, search and replace, line control, pagination and so on. However, most of the format commands are embedded printer commands, so you can't see the results on the screen.

A powerful function of the word processor is the "find" command. Once a document has been created (or freshly loaded into memory), it is possible to have the word processor automatically scan the document looking for a particular sequence of characters-a name, address, anything. You can also split the screen into four quadrants when using the word processor, so you can look at four different documents or the same document viewed through four windows. Each window can be displayed with a distinctive color combination. Files are saved in ASCII, so they can be loaded into any other word processor that accepts ASCII. Files from other word processors—like WordStar—that save files out to a special format can be loaded and then made understandable by searching and replacing the embedded control characters.

If telecommunications is an important part of your business, Miracle has some exciting capabilities rolled into one relatively inexpensive package. The ability to easily build automatic access routines and much larger agendas, to be executed at any time, saves both man-hours and money. Add the ability to bring data downstream into a spreadsheet, graph it and then merge all this data with a textual report, and you have a very interesting package indeed.

-Henry Fersko-Weiss

Unlocking Those Popular Programs

UNLOCK is a series of single-purpose utility programs (Albums A, B and C) that make backup copies of certain copyprotected software; \$49.95 each, retail or mail order; TranSec Systems, Inc., 1802-200 University Dr., Plantation, FL 33322; (305) 474-7548 (For more information circle 183 on the reader service card).

hate some of my favorite software, and I suspect I'm not alone in this paradoxical state of mind. What I hate. specifically, are the restrictions that copy protection puts on application software like Framework, Microsoft Word and Lotus 1-2-3. Copy protection makes programs difficult to install and inconvenient to use-especially with a hard disk or RAM disk. More importantly, copy-protection schemes can leave you without an emergency backup should something happen to the fragile program disk. Unlock, a "copy" program available from TranSec Systems, can change all that by effectively removing copy protection from a number of popular programs.

Unlock comes in three versions, or "albums," that work with three distinct groupings of copy-protected software. Album A is for use with Lotus 1-2-3, dBase III, Framework, Systat, Spotlight, Graphwriter, and Realia Cobol. Album B works with Symphony, Managing

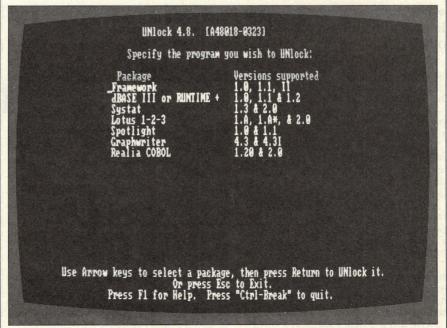
Your Money, Clipper, DoubleDOS, Electric Desk, Smartwork and Data Base Manager II. Album C attends to Microsoft Word, IBM Writing Assistant, 1-2-3 Report Writer, ThinkTank, Paradox, PFS:Access and Multilink Advanced. At this writing, Unlock covers the latest releases of these programs.

Unlock's function in each album is to enable you to make "unprotected" copies of the original program disks. These unprotected copies have no traces of copy protection and therefore can be copied to another floppy disk, or hard disk, using MS-DOS commands like COPY and DISKCOPY. The original program disks, however, are not altered.

Unlock has two particularly endearing characteristics: it works, and works simply. There is no users manual; the on-screen instructions and menus are clear and adequate. I was able to quickly produce unprotected copies of Lotus 1-2-3 release 2, Symphony 1.1, Microsoft Word 2.0, dBase III 1.1, and Framework II. These copies performed flawlessly, as did copies of these copies.

The point of all this copying, of course, is to eliminate the hindrances of copy protection. This it does. The newly unprotected software can be easily copied to a hard disk or a RAM disk as often as necessary, and there's no need to keep a "key disk" in the floppy drive. Furthermore, any worries about losing crucial program files are alleviated altogether, since several backup copies are at your disposal.

-Christopher O'Malley



Unlock's Album A menu offers a choice of programs to copy. Instructions are on screen.

JONATHAN CLYMER

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Desktop Storage For Portable Computers

DISK + ROM chip for Tandy Model 100 works in conjunction with most desktops, including the IBM Personal Computer, PC/XT, PC/AT and most MS-DOS computers; Apple II, IIe and II Plus computers with Super Serial cards; the TRS-80 series; the Tandy 1000, 1200 HD and 2000; and some CP/M systems. \$149.95 retail. Portable Computer Support Group, 11035 Harry Hines Blvd., No. 207, Dallas, TX 75229; (214) 351-0564 (For more information circle 184 on the reader service card).

f you have ever reluctantly killed a file in your lap-top computer just to clear enough memory for another file or program, you should take a look at Disk+. This lightning-fast and easy-to-use file-transfer program offers storage space, limited only by your desktop computer, and gives you instant access to files. On its simplest level, Disk+ lets you instantly transfer ASCII files between a lap-top and desktop computer. On another level, Disk+ helps realize the dream of portability without hassle.

Disk+ requires three components—one program for the lap-top, a second for the desktop, and an RS-232 cable. (If you don't have a cable, the Portable Computer Support Group sells them for most desktops for an additional

\$40.) The lap-top's component is on a snap-in ROM chip that takes no RAM space, leaving it free for files. The flop-py for the desktop is included.

Once the two computers are communicating, using Disk+ is as simple as—sometimes simpler than—running the Model 100. While other file-transfer programs exist, most permit only document (.DO) files to be transferred. Disk+ can handle any ASCII file, including BASIC and machine-language programs, and spreadsheet files created with Lucid, the Model 100 spreadsheet from the same company.

The Disk+ manual contains very clear instructions about how to handle and install the chip, how to activate the program, and when to put the floppy in your desktop. Disk+ is entered from the Model 100's main menu-put the cursor on the listing and press Enter. Immediately, you see a RAM directory much like the main menu on the Model 100 minus resident programs, such as Text and Telcom. Disk+ redefines the function keys and lists their new functions along the bottom of the screen.

Transferring is as easy as putting the cursor on a file and hitting the Enter key. In the very few seconds that the process takes, the Model 100 screen confirms what file it is sending to the desktop; the desktop screen confirms that it is receiving a file. You can transfer files individually (using the Enter key) or in groups (using F6, SVALL). If you choose to transfer all of your files to the desktop. Disk+ stores them in a

subdirectory that you name. You can reload them in the Model 100 individually (using the Enter key) or as a group, using F6, which becomes LDALL when you're working from the disk directory. A note of caution: When you use LDALL, all other files in the lap-top's RAM are then killed.

K illing or renaming files in Disk+ is much easier than in the Model 100's own program, which requires you to be in the BASIC program. Disk+dedicates function keys to renaming (F2) or killing (F5) a RAM file. These function keys work even if the lap-top and desktop are not connected.

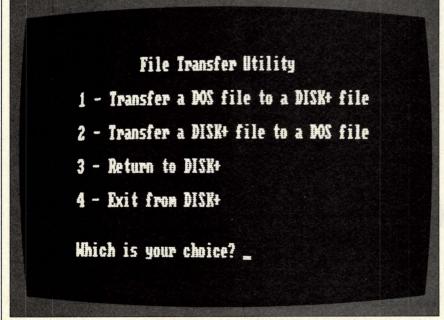
You don't need a monitor when you use Disk+ because the Model 100 controls the functions. However, you will need a monitor if you want to make use of the portion of Disk+ that lets you convert Disk+ document files into DOS files, or vice versa. With the menu-driven file-transfer utility, you can transfer a DOS file to a RAM file in the Model 100, or you can convert a Disk+ document file on the desktop's disk into a DOS file. This permits you to do things like draft a report on the Model 100, transfer it to the desktop, convert it to a DOS file, and use it with any ASCII word processor.

Heed the warnings in the manual that most problems are the result of a failure to communicate. Some versions of the software (for IBMs and compatibles) reguire a serial cable and a null modem adapter connected to the Com1 port. The Apple version is designed to run with a Super Serial Card in Slot 3—except in the IIe version, which requires that the card be in any slot except 3. Before you can use Disk+ with some TRS- or Tandy-series computers, you will need to have a dealer fix a circuit problem that prevents the desktops from detecting some RS-232 signals. If you need to change the Model 100 communications setting, pressing F3 in Disk+ guides you through the process.

The Portable Computer Support Group used to make Disk+ available as a cassette program, but licensed the cassette rights to Tandy, which will market it under the name of Remote Disk. Tandy also will continue to include Disk+ in its Express Order program.

Because add-on disk drives and cassette-tape storage require more time to set up and use, or add bulk, Disk+ is one of the best ways available to increase storage for your Model 100.

-Sandra R. Reed



The desktop computer menu lets you pick whether files move to or from a Model 100.

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Standard ROM	192K	192K	64K	64K	16K
Number of Keys	95	89	95	59	63
Mouse	Yes	Yes	No	Yes	Optional
Screen Resolution (Non-Interlaced Mode) Color Monochrome	640 x 200 640 x 400	640×200*** 640×200***	640×200 720×350**	None 512 x 342	560×192 560×192
Color Output	Yes	Yes	Optional	None	Yes
Number of Colors	512	4096	16	None	16
Disk Drive	3.5"	3.5"	5.25"	3.5"	5.25"
Built-in Hard Disk (DMA) Port	Yes	No	Yes	No	No
Midi Interface	Yes	No	No	No	No
# of Sound Voices	3	4	1	4	1

Atari 520ST with 512K RAM, \$799.

Connects to standard color T.V. For RGB color monitor add \$200.
With optional monochrome board (non bit-mapped).
Interlace Mode – 640x400.

1986 isn't which company to buy a computer from, but which computer to buy from Atari.



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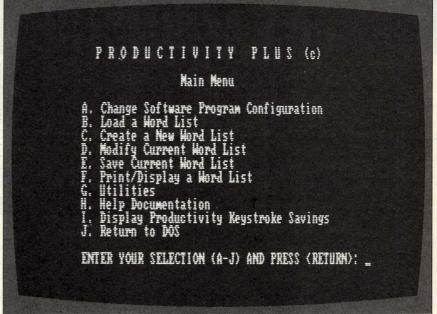
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PRODUCT REVIEWS



PRD + automatically expands "shorthand" abbreviations, enabling you to type faster.

Keyboard Shorthand

PRD+, a memory-resident program, runs on the IBM PC, XT, AT and compatibles. It uses 44k or 64k; \$195 retail; Productivity Software Intl., 1220 Bdwy., New York, NY 10001; (212) 967-8666 (For more information circle 182 on the reader service card).

all it data entry, or information input, or keyboarding. What the high-tech labels mask, of course, is the mundane chore of typing—a task no computer or software can relieve you of entirely. But a new "shorthand" program called PRD+ can do more for typists than anything else we've seen.

PRD+, from Productivity Software Intl., is a memory-resident program that works with many of the most popular applications for the IBM PC family and its compatible cousins. Not surprisingly, most of the products PRD+ works with are word processors, and all but one of the major packages-Microsoft Word—are supported. But PRD+ can work with other programs, too, including Lotus 1-2-3, Symphony, Framework, dBase III and SideKick.

In essence, PRD+ lurks in the shadow of your application program and waits for you to type an abbreviation it "recognizes." When you do, PRD+ types out the abbreviated word or phrase. The abbreviation "iow," in other words, automatically expands to "in other words."

PRD+ "recognizes" all abbreviated

words or phrases, even sentences, by checking what you type against a list of your abbreviated terms. This crosscheck is triggered each time you hit the space bar or Return key, or when you type in a punctuation symbol. The "shorthand" list, which is loaded into memory with the PRD+ program, contains abbreviations (up to eight characters each) and their long-form meanings (up to 240 characters each). PRD+ includes a list of several hundred abbreviations for common words and phrases. You can use and add to that list, or create your own lists from scratch.

The significance of PRD+, however, rests not in the fact that it can store and spit back abbreviated words or phrases. Keyboard macro programs can do that much, and so can some application programs. Rather, it is how PRD+ regurgitates abbreviations that sets it apart. Because it expands abbreviations on the fly, without the prompting of a special keystroke or menu, you can type away oblivious to its operation.

A typist's dream come true? Perhaps. There's an unstated but understood part of the learning process that may temper any speed gains for a time: You have to memorize your own shorthand before PRD+ can really begin to help you type. If you pause at each abbreviation, or type in the wrong one, you'll save little or no time. Once your abbreviations are committed to memory, though, PRD+ may cut your keystrokes in half.

-Christopher O'Malley

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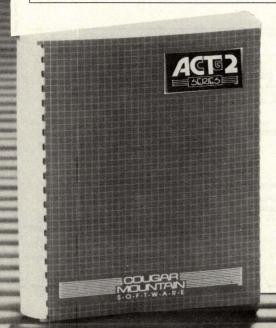
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BENCHMARKS

load and run than SideKick does. On a Tandy 1200 with 512k of RAM, loading SideKick's five modules and help screens with the maximum 55k operating buffer took 105k. Installing Spotlight's six modules and help took 115k. Both work with smaller amounts of RAM set aside, but you give up capabilities. SideKick's minimum buffer is 5k; Spotlight's is 45k. SideKick is available in both copy protected (\$54.95) and non-copy protected (\$84.95) versions. Spotlight, which retails for \$75, has a copy protection scheme that permits only two installations of the core file onto a hard disk, although the modules can be freely copied into subdirectories.

If you have a color card, you can choose from among 16 colors in Spotlight and 128 in SideKick. SideKick will blink (foreground, background or frame) if you add 128 to the number of the color selected. Although Spotlight does not have a master menu, each module includes its own menu. The Escape key toggles between the menu and its application below. Both programs enable you to overlay windows, although only one can be active at any time.

Spotlight's most versatile module is its appointment book, which has far more features than SideKick's calendar. Both have a range that begins on Jan. 1, 1901 and ends on Dec. 31, 2099. In SideKick, you can schedule events only in halfhour segments between 8 a.m. and 8:30 p.m. In Spotlight, you could schedule a meeting-or several meetings-every minute of the day. Spotlight's default segments are 15, 30, or 60 minutes, but if a meeting starts at 7:40, you simply add it to the schedule. Both show a day at a time or a month at a time. Spotlight also records and shows weekly meetings; it will display only times during which meetings are scheduled, if you choose. Spotlight also includes an alarm that you can set to ring from one to 10 minutes in advance of the scheduled time.

Beyond the appointment book/calendar, though, Spotlight isn't nearly as rich with features as SideKick. SideKick's calculator has three modes—decimal (18 digits), binary (20), and hexadecimal (12). Spotlight has only a decimal mode. SideKick can paste a number from the calculator to any key (somewhat like the macros in Borland's SuperKey) and then put those numbers in any application. Spotlight will paste a calculated number only to the point where you left the cursor before calling up the calculator.

The notepad in Spotlight is limited to eight pages of 14 lines each. SideKick's

Personal Property of the Party	THE RESERVE OF THE PERSON NAMED IN	STATE OF THE OWNER, THE PARTY OF
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FEATURES	SPOTLIGHT	SIDEKICK	
Maximum Size	7 lines per card, 500 cards per list, 36 lists	Limited only by disk space	
Phone Directories	Dials only from inside the phone book accessory	Dials any number on the screen or from inside the dialer accessory	
Source:	Created in phone book accessory	Created in word processor or SideKick Notepad	

Unique Modules

FEATURES	SPOTLIGHT	SIDEKICK
Miscellaneous	Index Card File; 7 lines per card, 500 cards per list, 36 lists. DOS Filer; View file or directory, move a directory up or to a home directory, change directory, sort files (by date/time, extension, file size or file name), information about files or directories, make directories.	ASCII Table; 256-character ASCII set
	ry, copy file, delete file, rename file, paste file name, drive desig- nator and file name or path name into previous application.	r bries in the roomers. Herald

notepad is virtually unlimited. You can bring any file from any directory into the notepad or create a file of any length in any directory. SideKick's notepad includes a text editor with extensive editing capabilities that even responds to WordStar commands.

ideKick's auto-phone dialer has a wide range, too. Phone lists are created in the notepad or a word processor, so size is limited only by disk space. You don't have to dial from a formal list, though, because SideKick can dial any number on a screen in any program that SideKick is compatible with. Like SideKick, Spotlight's dialer handles complicated phone commands-if you have to dial 9 to get through a switchboard, for instance, or use an alternative long-distance carrier or phone credit card numbers. Spotlight's phone book consists of individual cards that contain seven lines each. You can have up to 500 cards per list, and up to 36 lists, so capacity isn't much of a problem. Spotlight will dial only from a card or a list within its phone book.

Although they share some modules, the two utility programs also have unique modules. SideKick gives you a table of the 256-character ASCII set. Spotlight contains an index card file that is identical to the phone book without an auto-dialer. Spotlight also includes a DOS filer to view files or directories;

change directories; sort files; make directories; copy, delete and rename files; and other DOS functions.

Despite the fact that they work as accessories to many programs, SideKick and Spotlight won't work with every package without modifications. Spotlight won't function at all with word processors, such as Xywrite, that also use keyboard and timer interrupts. SideKick can be used with some, including Xywrite, as long as you exit by pressing Ctrl and Alt rather than Escape. If you're using SideKick with Microsoft Word, you can use Word only in character mode. Because Symphony and Framework require a graphics mode, activating SideKick can turn the screen into a blinking mess. The screen returns to normal when you exit SideKick.

Both Spotlight and SideKick work with graphics adapters and displays that meet the Hercules and IBM standards. SideKick adjusts to many nonstandard graphics adapters; Spotlight cannot be used in nonstandard modes. Both also get along with keyboard redefiners, such as Prokey and SuperKey, although you generally must load Spotlight or SideKick as the last RAM-resident program.

Because we liked Spotlight's appointment book so much, we tried loading both Spotlight and SideKick. We succeeded in calling up the appointment book, but froze the system when we then tried to call up SideKick's notepad.

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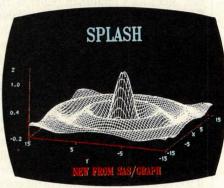
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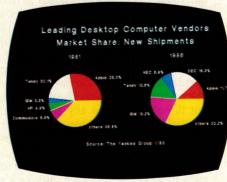


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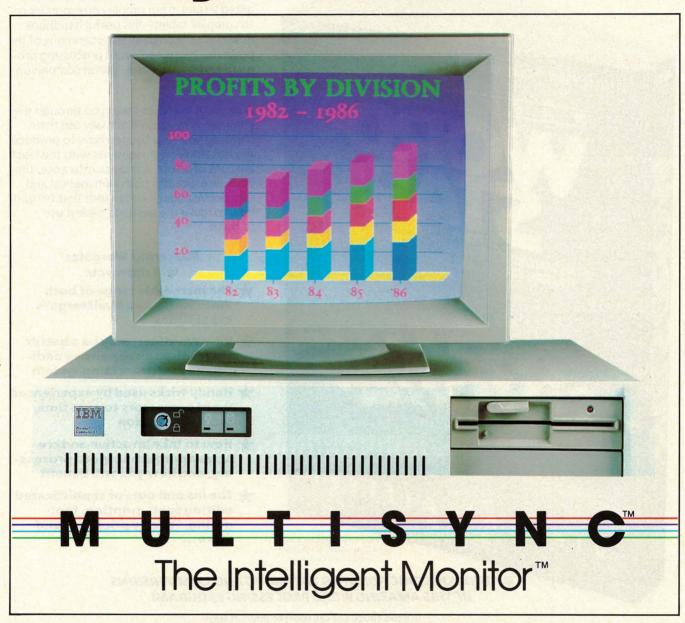
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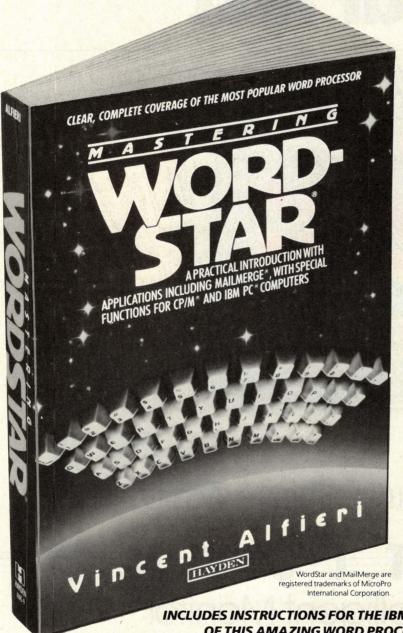
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SYSTEMS

THE APRICOT XEN is an MS-DOS-based personal computer that uses an 80286 processor running at 7.5MHz. XEN comes with an Apricot Softclone disk that enables XEN to run software for the IBM Personal Computer. The computer comes with 1Mb of RAM (which is expandable to 5Mb), a mouse, six expansion slots, an IBM PC/AT-compatible keyboard, RS-232C and Centronics ports, a 20Mb hard disk and a 3.5-inch disk drive. The expansion slots are not compatible with boards made for the IBM PC. Apricot has an expansion box, priced at \$195, with room for two cards designed for the IBM PC. Apricot is offering a 5.25-inch drive, priced at \$195, that will run IBM software. In addition, XEN comes bundled with MS-DOS 3.1 and Microsoft Windows, Apricot. Inc., 47173 Benicia St., Fremont, CA 94538; (415) 659-8500; \$3,995 retail. (For more product information, circle 274 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

PERIPHERALS

THE AMDEK COLOR 500 MONITOR is a 13-inch color monitor that accepts RGB and composite video input signals. It supports the IBM Personal Computer 16-color palette. While designed as a computer monitor, it can also work with a VCR or video disk player. Amdek Corp., 2201 Lively Blvd., Elk Grove Village, IL 60007; (312) 364-1180; \$399 retail. (For more product information, circle 275 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE BP-52001 dot matrix printer offers a variety of character sets, a 4k print buffer, and maximum print speeds of 206 characters per second in draft mode and 103 characters per second in near-letter quality mode. Hattori Seiko Computer Peripherals, division of Hattori Corporation of America, 1111 Macarthur Blvd., Mahwah, NJ 07430; (201) 529-4655; \$1,089 retail. (For more product information, circle 276 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

CAPTURE is a digitizer board for the IBM PC, PC/XT, PC/AT and compatibles that enables the user to capture a frame from a camera or other video source. The captured frame is then stored in memory, and can be printed or displayed on a composite graph-

ics or television monitor. Once the frame is captured, the user can zoom in on sections, overlay text, shade sections and combine the frame with other captured frames. The board offers a resolution of 512 by 512 pixels and a palette of 64 shades. Genoa Systems Corp., 73 East Trimble Road, San Jose, CA 95131; (408) 945-9720; \$1,495 retail. (For more product information, circle 277 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE CLEAR SIGNAL SMART 300 is a 300-baud modem with auto-dial and auto-answer features. It includes a RJ-11 phone cord; a serial cable for connection to the personal computer is not included. Inmac, 2465 Augustine Drive, Santa Clara, CA 95054; (800) 547-5444; \$229 direct order. (For more product information, circle 278 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE CM-1370 RGBI color monitor offers a pixel resolution of 720 by 400, and displays 16 colors. Designed for the AT&T 6300 and 6300 Plus Personal Computers, the monitor has a 13-inch screen that has been chemically treated to reduce glare. Other features of the monitor include a green text mode, a dark-faced tube to improve contrast, and centering of on-screen material. The monitor requires a cable adapter that costs \$39. Tatung Company of America, Information and Communications Division, 2850 El Presidio St., Long Beach, CA 90810; (213) 637-2105; \$799 retail. (For more product information, circle 279 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE CMS 4x4 is a short-slot, add-on board for the IBM PC, PC/XT, PC/AT, Portable Personal Computer and compatibles that provides an RS-232C port, a parallel port, a game port and a clock/calendar. The clock/calendar is powered by a lithium battery. CMS, Inc., 401-B West Dyer Road, Santa Ana, CA 92707; (714) 549-9111; \$195 retail. (For more product information, circle 280 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE D10-40 is a 136-column daisywheel printer that features a maximum print-speed of 40 characters per second. Additional features include three character pitches, compatibility with Diablo printwheels, serial and parallel ports and an 8k buffer. C. Itoh Digital Products, 19750 South Vermont, Suite 220, Torrance, CA 90502; (213) 327-

2110; \$949 retail. (For more product information, circle 281 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

DIALOG/40 is an expansion board for the IBM PC, PC/XT and PC/AT designed to enable the connection and servicing of four telephone lines at one time. Software for the Dialog/40, says the product's developer, provides subroutines for line management, touch-tone response, record and playback, line selection and dialing. Dialogic Corp., 60 Baldwin Road, Parsippany, NJ 07054; (201) 334-8450; \$995 direct order. (For more product information, circle 282 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

DISKIT 2 is a dual, external, removable hard disk drive with 10Mb of storage in each drive. Developed for the IBM Personal Computer, the 2.25-inch-high unit fits between the monitor and the computer. It comes with the needed cables and software for installation. The software is compatible with IDEAshare and IDEAnet resource sharing and with networking products from IDEAssociates. IDEAssociates, Inc., 35 Dunham Road, Billerica, MA 01821; (617) 663-6878; \$3,995 retail. (For more product information, circle 283 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE EMERALD 201C is a 2400-baud modem that features digital signal processing designed to reduce data errors caused by poor line quality. The Emerald 201C is 7-inches wide by 10-inches long by two-inches high. Emerald Technology Group, Inc., 1601 116th N.E. Bellevue, WA 98004; (206) 462-8200; \$685 direct order. (For more product information, circle 284 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

EASI-DISK is designed to transfer information between an IBM Personal Computer and non-IBM equipment over an RS-232 cable. Easi-Disk reads and writes PC-DOS disks and has selectable transfer rates ranging from 110- to 19.2k baud. Analog & Digital Peripherals, Inc., 815 Diana Drive, Troy, OH 45373; (513) 339-2241; \$1,095 direct order. (For more product information, circle 285 on

For more product information, please circle the appropriate number on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.

PERSONAL COMPUTING/APRIL 1986

It's amazing what you can reveal when you strip.

Introducing a shape that's about to turn on an entire industry.

The Softstrip[™] data strip. From Cauzin.

This new technology allows text, graphics, and

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The Cauzin Softstrip System Reader replaces tedious typing by scanning the strip and reading it into your computer.

your computer using a scanning device called the Cauzin Softstrip™ System Reader.

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Softstrip data strips, like those you see here, can contain anything that can be put on magnetic disks.

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The Cauzin Softstrip System Reader is now compatible with the IBM PC, Apple II and Macintosh.

A single strip can hold up to 5500 bytes of encoded data.

It can stand up to wrinkles, scratches, ink marks, even coffee stains.

And it can be entered into your computer with a higher degree of reliability than most magnetic media. Simply by plugging the Cauzin Reader into your serial or cassette port and placing it over the strip.

The reader scans the strip, converts it to computer code, and feeds it into any standard communi-

cation interface.

Because strips are so easy to generate, most of your favorite magazines and books will soon be using them in addition to long lists of program code.

And you'll be able to enter programs without typing a single line.

There is also software for you to generate your own strips. Letting you send every-



Soon everyone will be stripping as data strips appear in popular magazines, computer books and text books.

thing from correspondence to business information using our new technology.

Find out how much you can reveal by stripping. Just take this ad to your computer dealer for a demonstration of the Cauzin Softstrip System Reader.

Or for more information and the name of the dealer nearest you, call Cauzin at 1-800-533-7323. In Connecticut, call 573-0150.



Cauzin Systems, Inc. 835 South Main St., Waterbury, CT 06706

(For More Information Circle 19)

SORTING: USING TINY BUBBLES

Today, more than ever before, computer users are interested in arranging and sorting vast amounts of information. Essential to this process is the element of speed. One of the quickest and most efficient methods used in numerous programs today is bubble sorting.

The four data strips on the far right contain the program BUBBLE SORT by Alex May. Alex has come up with a unique way of showing how a computer arranges items.

Read the strips into your Apple and run the program. Press CONTROL-RESET to exit.

BECOME MORE EFFICIENT

Efficiency has become a popular "buzz" word in today's society. Like most terms, everybody talks about it but few can tell you how to measure its results. TOWER PUZZLE is a thought game that helps you measure your personal efficiency.

You're presented with three posts. You select one to ten rings and try to move them from post to post... efficiently. At first, this might sound easy, try it! You'll be very surprised.

Read the two strips, on the near right, into your Apple and run the program. Press CONTROL-RESET to exit.

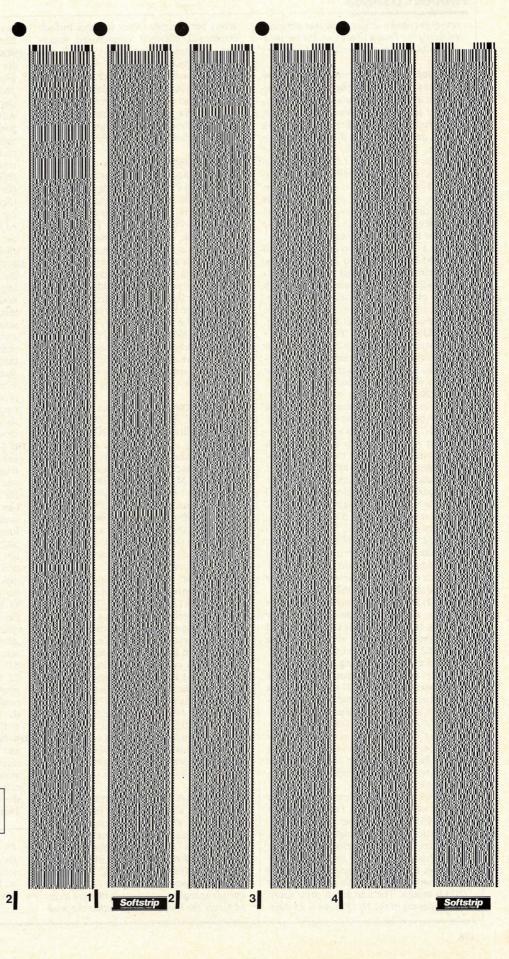
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PRODUCT LISTINGS

one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE FX-286 is a 136-column printer that offers a maximum print speed of 200 characters per second in draft mode and 40 characters per second in near-letter quality mode. The printer uses a parallel port, has an 8k buffer, and produces six different character pitches. Epson America, Inc., Consumer Products Division, 2780 Lomita Blvd., Torrance, CA 90505; (213) 539-9140, (800) 421-5426; \$749 retail. (For more product information, circle 286 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

IDETIX is a digital imaging system for use with the IBM PC, PC/XT and PC/AT. The system includes a MOS image sensor that produces adjustable frame sizes and either 256 by 256 or 512 by 512 pixels. Micron Technology, Inc., Vision Systems Group, 2805 E. Columbia Road, Boise, ID 83706; (208) 383-4000; \$695 direct order. (For more product information, circle 287 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE JX-720 ink jet printer contains ink cartridges in yellow, cyan, magenta and black that can be combined to produce 256 colors. The JX-720, which prints text at 35 characters per second, handles 8.5- by 11-inch paper, overhead projector transparencies, or roll paper. The printer has an automatic print head cleaning station designed to reduce nozzle clogging problems. The JX-720 connects to personal computers with a Centronics interface. Sharp Electronics Corp., 10 Sharp Plaza, Paramus, NJ 07652; (201) 599-3856; \$1,495 retail. (For more product information, circle 288 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE KX-P3131 daisywheel printer offers such features as centering, bold and shadow printing, single and double underlining, and super- and subscripting. Controls for setting right and left margins, auto justification, pitch selection, line spacing and impression intensity are located across the printer's front panel. The KX-P3131 prints at a speed of 17 characters per second. Panasonic Industrial Company, One Panasonic Way, Secaucus, NJ 07094; (201) 348-7183; \$949 retail. (For more product information, circle 289 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE M-1109 80-column printer from Brother International features a maximum print speed of 100 characters per second, tractor and friction feed, and Centronics and RS-232 ports. It is switch selectable between IBM Personal Computer and Epson 100+protocols and character sets. The M-1109 offers both draft- and near-letter quality (NLQ) modes. The maximum print speed when printing in the NLQ mode is 25 char-

acters per second. Other features include condensed, enlarged, emphasized, superand subscript, auto-underline, and 10- and 12-pitch printing. Brother International Corporation, 8 Corporate Place, Piscataway, NJ 08854; (201) 981-0300; \$269 retail. (For more product information, circle 290 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE MAYNSTREAM PCI 20 is an internal streaming tape backup unit for the IBM PC, PC/XT and PC/AT. According to its developer, it backs up a 10Mb drive, file-by-file, in three minutes using .15-inch data cassettes. The PCi 20 can split files, putting part of a file onto a new cassette after the first becomes full. In addition, the unit performs automatic read-after-write checks to prevent data from being damaged during the backup procedure. Included with the PCi 20 are the controller interface card, a data cassette and software. Maynard Electronics, 460 E. Semoran Blvd., Casselberry. FL 32707; (305) 331-6402; \$1,299 retail. (For more product information, circle 291 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

MEGAFUNCTION is an expansion board for the IBM PC, PC/XT and PC/AT that features 1.25Mb of memory, a RAM disk with an auxiliary power supply, a parallel and serial port, and a clock/calendar. The auxiliary power supply enables programs loaded onto the RAM disk to remain there after the computer is turned off. Tecmar, Inc., 6225 Cochran Road, Solon, OH 44139-3377; (216) 349-0600; \$895 retail. (For more product information, circle 292 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE MULTISYNC color monitor automatically adjusts to graphics board scanning frequencies from 15.75kHz to 35kHz. The user can switch between TTL or Analog Video output, and a seven-color text switch. It has a maximum resolution of 800 lines horizontally and 560 lines vertically, and a .31mm dot pitch. A cable is also included for use with the IBM Professional Graphics Adapter, the Enhanced Graphics Adjuster and the Color Graphics Adapter. NEC Home Electronics Inc., 1401 Estes Ave., Elk Grove Village, IL 60007; (312) 228-5900; \$799 retail. (For more product information, circle 293 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.

THE SANDSTAR FLOPPY/HARD DRIVE CONTROLLER CARD is an internal card for the IBM PC, PC/XT, and Portable Personal Computer that controls two internal 5.25-inch floppy drives and two hard disks. Maynard Electronics, 460 East Semoran Blvd., Casselberry, FL 32707; (305) 331-6402; \$595 retail. (For more product information, circle 294 on one of the reader service cards that are located facing the Product Index within the prod-

uct review section or opposite the Advertiser's Index.)

SHORT SLOT is a short-slot expansion board for the IBM PC, PC/XT and PC/AT that is available in three configurations. Version I provides up to 512k of RAM, a serial and parallel port, a clock/calendar and utility software. Version II contains a serial and parallel port, a clock/calendar and utility software. Version III contains both a parallel and serial port. Vutek Systems, 10855 Sorrento Valley Road, San Diego, CA 92121; (800) 621-0852; \$249 (for Version I), \$159 (for Version II), \$119 (for Version III) retail. (For more product information, circle 295 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

SIDEDIALER is a half-size expansion card for the IBM PC, PC/XT, and PC/AT that enables the user to dial with SideKick and other desktop managers. It comes with software that provides additional windows and onscreen dialing, stores 10 telephone numbers, and performs automatic redial functions. SideDialer works with touch-tone and pulse dialing phones. Quadtel, 2030 East 4th St., Suite 234, Santa Ana, CA 92705; (714) 543-7755; \$54.95 retail or direct order. (For more product information, circle 296 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE STREAMLINER SERIES is a three-product line of storage subsystems that include a cartridge tape backup unit and two hard disk and tape backup units. Each is for use with the IBM PC, PC/XT, PC/AT and compatibles. The FT-60 is a .25-inch, file-oriented, streaming cartridge tape backup unit with a formatted capacity of 60Mb. The FT-60 plugs directly into the computer and does not require a controller board for installation. The SL-60/25 and SL-60/51 are hard disks and tape backup units. The SL-60/25 has a formatted capacity of 20Mb, and the SL-60/51 has a formatted capacity of 41Mb. Each unit requires one controller card for running both the hard disk and tape unit. Alloy Computer Products, Inc., 100 Pennsylvania Ave., Framingham, MA 01701; (617). 875-6100; \$995 for FT-60, \$3,295 for SL-60/ 25, \$4,295 for SL-60/51 retail. (For more product information, circle 297 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE TWIN PAK expansion board adds a serial and parallel port, up to 512k of RAM, a clock/calendar and Hercules-compatible monochrome graphics. In addition, it comes bundled with The Twin, a spread-sheet designed to perform like Lotus 1-2-3. Twin Pak is for the IBM PC, PC/XT and

For more product information, please circle the appropriate number on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index. PC/AT. Vutek Systems, 10855 Sorrento Valley Road, San Diego, CA 92121; (800) 621-0852; \$499 retail. (For more product information, circle 298 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

ZVM-1330 is a 13-inch color monitor that features an 80-character by 25-line display, 16-color display and pixel resolution of 640 by 240. On/off, brightness and contrast controls are located on the front panel. The monitor measures 13 inches by 14.2 inches by 15 inches and weighs 29 pounds. Zenith Data Systems, 1000 Milwaukee Ave., Glenview, IL 60025; (312) 391-8949; \$649 retail. (For more product information, circle 299 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

MISCELLANEOUS

THE COLOR COMMANDER is a switching device that controls the colors displayed on an RGB monitor connected to an IBM Personal Computer. The Color Commander enables users to change any of 16 colors displayed on the screen to another color. In addition to being able to change colors used in graphs or charts, users can also change white characters on a black background to a variety of different color combinations. Color Commander can be used with most graphics software, including Lotus 1-2-3, PC Paint, and PC Paintbrush, and with WordStar and other text-based programs that do not support color. Perma Power Electronics., Inc., 5601 West Howard Ave., Chicago, IL 60648; (312) 647-9414; \$359 retail. (For more product information, circle 305 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE CV422 is an adapter for RS-232 devices that enables the user to convert RS-232 equipment to the RS-422 standard. It is available in models with and without an external power supply. Without an external power supply, the unit supply draws power from the host equipment. Emulex Corporation, 3545 Harbor Blvd., PO Box 6725, Costa Mesa, CA 92626; (714) 662-5600; \$85, \$95 with power supply, retail. (For more product information, circle 306 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE CLEANCYCLE KIT is designed to clean .25-inch streaming tape drives in order to reduce errors during hard disk backup. Inmac, 2465 Augustine Drive, Santa Clara, CA 95054; (800) 547-5444; \$21.95 direct order. (For more product information, circle 307 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE DISK DRAWER is a disk holder for 5.25-inch disks that can be placed on a desk or fit-

ted onto the sides of a desk drawer. The drawer can be adjusted to fit in letter, legal or European style file cabinets and desk drawers. It comes with dividers and holds up to 60 disks. Inmac, 2465 Augustine Dr., Santa Clara, CA 95054; (800) 547-5444; \$19.95 direct order. (For more product information, circle 309 on one of the reader service cards that are located facing the Product Index within the product review section or op-

posite the Advertiser's Index.)

EXCLUDE-A-PHONE makes extension phones inoperable if one phone is being used with a modem for data transmission. According to the product manufacturer, this prevents interruptions in data transmission. Exclude A-Phone draws its power from the phone's electrical current. R.K. Burtchaell Co., 516 SE Morrison, Suite 201, Portland, OR 97214; (800) 342-5752; \$23.95 direct order.

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PRODUCT LISTINGS

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THE KEYBOARD DRAWER, which houses your computer's keyboard, attaches to any table wider than 36 inches and can be positioned under the table when not in use. The Keyboard Drawer comes with a wrist support. Marvel Metal Products Company, 3843 West 43rd St., Chicago, IL 60632; (312) 523-4804; \$110 retail. (For more product information, circle 311 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

MEGABAG is a carrying case designed to hold the Compaq portable computer; Kaypro 2, 4, 10 or 16; Seequa Chameleon; or the Sanyo MBC-775. The charcoal-color, acrylic case has four compartments for accessories such as a modem, cables, documentation and disks. It has a detachable shoulder strap and carrying handles. Hill Co., Box 368, Arlington, VA 22210; (703) 821-8608; \$109.95 direct order. (For more product information, circle 312 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

MICROREF KEYBOARD TEMPLATES are 18-inch wide plastic templates. Each template con-

tains commands and instructions for operating such software programs as Lotus 1-2-3, MultiMate, WordStar, DisplayWrite 3. WordPerfect, dBase III and SideKick. The templates fit on standard IBM-type keyboards or can be adapted to other types of keyboards with an included mounting kit. Microref Division, Educational Systems, Inc., 1000 Skokie Blvd., Wilmette, IL 60091; (800) 942-6077 in IL, (800) 323-6043; three templates for \$12.95, five templates for \$19.95 direct order. (For more product information, circle 313 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

POWERLINE ONE AND POWERLINE STRIP are power outlets designed to protect personal computers and peripherals from power surges. PowerLine One is a single-outlet surge protector, while PowerLine Strip is a six-outlet unit. Both have status lights that indicate that the units are functioning properly. PowerLine Strip also includes an alarm that sounds if the device should fail to protect against a power surge. In addition to power surges, both devices protect against power spikes and transient noise. Computer Accessories Corporation, 6610 Nancy Ridge Drive, San Diego, CA 92121; (619) 457-5500; \$14.95 (PowerLine One), \$49.95 (PowerLine Strip) retail. (For more product information, circle 314 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

ROLLTOP AND LOCKING DATA CARTRIDGE FILE are storage boxes designed to hold .25-inch tape backup cartridges. The rolltop cartridge file holds seven cartridges while the locking file holds 10 cartridges. Inmac, 2465 Augustine Drive, Santa Clara, CA 95054; (800) 547-5444; \$24.95 (rolltop file), \$44 (locking file), direct order. (For more product information, circle 315 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

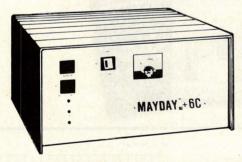
RYTE LIGHT is a light that mounts to a printer or typewriter to make viewing the printed material easier for the user. It comes with its own power supply. Conmac Service Company, PO Box 270, Lyons, NJ 07939; \$34.95 direct order. (For more product information, circle 316 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

PRODUCTIVITY

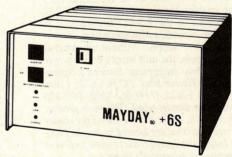
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space, says the program's developer, the software will handle any size portfolio. Interest rate structures, payment terms, etc. are user defined. The program allows for transaction back-dating and automatically adjusts interest due. It requires 256k. Le-Conte Software, 8 Emory Place, Knoxville, TN 37917; (615) 521-6405; \$2,500 direct order. (For more product information, circle 201 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

BRAVO retail management system was designed for small to medium-size retail businesses interested in computerizing their operations. Some features of the system include: a pop-up calculator; custom report formatter; bar code reader support; automatic cash drawer balancing; multiple price discounts; commissions paid on sales, cost or profit; rank item inventory; and retail billing, inventory and receivables reporting. The program requires 256k, a 10Mb hard disk, PC-compatible cash draw and a 40- or 80-column printer. Armor Systems, Inc., 324 N. Orlando, Maitland, FL 32751; (305) 629-0753; \$695 retail. (For more product information, circle 202 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

CHARTS UNLIMITED integrates graphics and

text processing into one system for creating, editing and printing flow charts, organizational charts, floor plans, electrical diagrams. Gantt charts, forms and other charts. The program uses the same command sequence as Lotus 1-2-3 and recognizes the chart as one large worksheet with 256 columns and up to 100 rows. Text editing capabilities make it possible to enter, insert and delete characters as you would using a word processor. There is also a Find command that locates a text string in the worksheet and displays the area of the worksheet in which the string appears. The program provides a set of flow chart objects and geometric shapes, along with a set of smaller symbols, such as mathematical symbols and arrows that point in eight different directions. A symbol editor enables you to define your own symbols. You may also create large objects and maintain libraries of symbols and objects on disk. All or part of a chart can be printed horizontally or sideways using most dot-matrix printers. The program requires 256k. Graphware, Inc., PO Box 373, Middletown, OH 45042; (513) 424-6733; \$295 direct order. (For more product information, circle 203 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

CHEMLIT is a software tool designed to organize personal research or chemical literature files. A two-dimensional structure diagram and abstracts of chemical data may be input via mouse or cursor keys. The files can then be searched and retrieved by typing the structure name or any keyword in the abstract. Searches on abstracts may be combined with substructure searches, as well. The program requires 256k. ComPress, PO Box 102, Wentworth, NH 03282; (603) 764-5225; \$150 retail. (For more product information, circle 204 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

CLIPPER is a compiler designed to speed up dBase III programs from two to 20 times. According to the program manufacturer, the software generates an executable, relocatable element that is impossible to decode back to original source language, thus protecting the software developer. A 256k system is required. Nantucket, Inc., 5995 Sepulveda Blvd., Culver City, CA 90230; (213) 390-7781; \$695 retail. (For more product information, circle 205 on one of the reader service cards that are located facing the Prod-

For more product information, please circle the appropriate number on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.

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	{ { ft.r	1103-12MM 3036-6MM 3036-10MM 3036-10MF 3036-10MF 3025-6MM 3025-10MM 3025-10MF 3006-5MM 3006-5MM 3006-5MF 3006-8MF 3006-8MF

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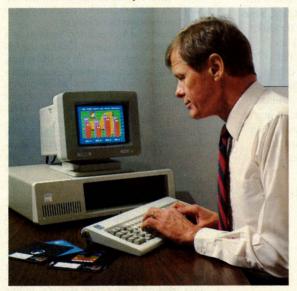
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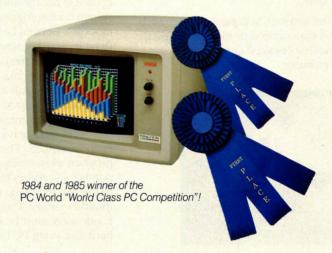
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PRODUCT LISTINGS

uct Index within the product review section or opposite the Advertiser's Index.)

DISK WILL is designed for the non-lawyer who wants to construct his or her own will without consulting a law firm. The program, says its developer, guides the user in the preparation of a legal will that has the necessary provisions for the appointment of a personal representative, the distribution of specific gifts and residual property, and the appointment of guardians for minor children. The program requires 128k and a printer. Self-Help Legal Services, PO Box 10694, Minneapolis, MN 55440; (612) 924-3323; \$39.95 retail or direct order. (For more product information, circle 206 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

home management system that has the following functions: text editing, budgeting, net worth, check management, stock security, personal finance, personal inventory, memo writing, mail list and appointment scheduling. The program requires 128k. Micro Architecture, Inc., 6 Great Pine Ave., Burlington, MA 01803; (617) 273-5658; \$49.99 retail. (For more product information, circle 207 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

FINANCIAL INDEPENDENCE is a personal money management and tax estimation program that requires a 256k system. The user can track his or her net worth, plot financial status graphs, print checks, prepare stock holdings reports and chart stocks based on his or her own information or on stock information received from CompuServe's on-line data base. The program also enables the user to set education, investment or retirement savings goals. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903; (415) 479-1170; \$149.95 retail. (For more product information, circle 208 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

HELPING HAND is a productivity aid and reference utility that enables users to access on-line reference files. Helping Hand also enables software developers to create productivity aids in both industry-specific and horizontal markets. The program runs in a windowing environment and requires 33k. Dogwood Software, 1800 Peachtree St., Suite 510, Atlanta, GA 30309; (404) 355-5272; \$9.95 to \$59.95 direct order. (For more product information, circle 209 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

NOCOLOR, for the user who has a composite monitor and color graphics board installed in his computer, is designed to sharpen the image displayed on the monitor and provide more pleasing contrast backgrounds. When the program is installed, the user can toggle between color and black-and-white modes. NoColor uses 358 bytes of memory. Personal Computer Products, 3080 Olcott Drive,

B-130, Santa Clara, CA 95054; (408) 988-0164; \$19.95 direct order. (For more product information, circle 210 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

PALANTIR FILER, which can be used with or without Microsoft Windows, is a data base filer that features nine levels of indexing and sorting, 150 fields per record, four-function conditional math, a mouse interface, pulldown menus and a report generator. For the user who does not have Microsoft Windows. the program offers the chance to test drive the Windows environment. With Windows, the program supports multitasking features such as sorting and indexing a data file while the user works with Microsoft Paint or Write. The program requires 512k. Palantir Software, 12777 Jones Road, Suite 100, Houston, TX 77070; (800) 368-3797, (713) 955-8880; \$145 retail. (For more product information, circle 211 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

R:BASE 5000 MULTI-USER is a relational data base designed for the PC-DOS-based local area network. The program includes R:base 5000's Application Express feature, which helps both experienced and inexperienced users develop their own data base applications while learning the system; its Compiler feature, which "locks down" application code and prevents tampering; and its Comprehensive Procedural Language, which allows for the development of more complex applications. In addition, R:base Multi-user has features such as item-level locking and concurrency control that Microrim claims will ensure data integrity and user control. The memory requirements for the program are 640k for the server and 512k for the other systems. Microrim, Inc., 3380 146th Place S.E., Bellevue, WA 98007; (206) 641-6619; \$1,500 retail. (For more product information, circle 212 on one of the reader service cards that are located facing the Product



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PRODUCT LISTINGS

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ROOM CALENDAR is designed for scheduling college and university rooms and facilities. The program shows the availability of all rooms in the institution. The user can schedule a particular room at a specified time, or automatically find an available room that satisfies particular criteria, such as class size, audio-visual facilities, or access for the handicapped. The program schedules classes that meet regularly, whether several times a week or once a month, as well as one-time events. The program can schedule up to 225 rooms, says its developer, and automatically prevents double-bookings. It requires 256k. A hard disk is recommended. Pro/Tem Software, Inc., 814 Tolman Drive, Stanford, CT 94305; (800) 826-2222; \$499 direct order. (For more product information, circle 213 on

one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

TIMESLIPS is a time-tracking system that includes reporting, billing, and business graphics generators. The program can be used to track time-related costs for specific projects, produce bills for time-related services, measure employee productivity, compare time costs with billable time and produce business usage logs for IRS claims. Timeslips consists of three modules: the setup program, the timer program and a data base report generator. It also contains a full project description, a date stamp, an accounting of accumulated time and a record of estimated completion time. The program requires 256k. North Edge Software Corp., PO Box 286, Hamilton, MA 01936; (617) 468-7678; \$99.95 retail. (For more product information, circle 214 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

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BDL.ESTATE is a six-section program designed to organize your personal, professional and financial information. The Basic Estate Information section includes your date of birth, current employer, union or professional association membership and where important papers can be found. The Assets and Debts section stores information on your bank accounts, business interests, insurance, loans, personal property, pensions, real estate holdings, savings bonds, securities, trust funds, miscellaneous assets, credit cards, mortgages and miscellaneous debts. The Net Worth Work Sheet finds all the assets and debts for your estate and prints a worksheet with one line for each asset and debt. The Bequests section enables you to describe the possessions you wish to leave to others, list the people to whom you are leaving these possessions, as well as note where the ownership papers for the items are located. In the Final Plans section, you decide on your funeral arrangements or memorial service. In the final section, Important People, you can list names, addresses and phone numbers. The program requires 128k. BDL

Homeware, 2509 North Campbell Ave., #328, Tucson, AZ 85719; (602) 577-1435; \$69.95 direct order. (For more product information, circle 218 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE CORPTAX STATE PLANNER, designed for corporate tax departments involved in state tax estimates and planning, contains a data base of all states' corporate income tax rates and apportionment methods. Adjustments can be implemented by jurisdiction or income item. Calculations are immediate, says the program's developer, and ready for review. The Planner also enables the user to track overpayment credits and payments. It requires 512k, a hard disk and a printer. Financial Decision Systems, Inc., 28035 Dorothy Drive, Agoura Hills, CA 91301-2698; (818) 706-2000; \$795 direct order. (For more product information, circle 219 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

DOS HELP! is designed to offer answers to DOS questions from the beginning to the experienced level. Users choose either a command name or an English inventory from a menu and, according to the program's developer, the information appears instantly. The program requires 128k. Popular Programs, Inc., 135 Lake St., Suite 180, Kirkland, WA 98033; (206) 822-7065; \$39.95 retail. (For more product information, circle 220 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

E Z CHURCH FINANCE SYSTEM is a general ledger system designed for religious institutions. According to its manufacturer, the system will help reconcile multiple bank accounts; track accounts by vendor name, check number, date and expenses paid; print reports of income and expenses; compare income and expenses to budget, previous periods, or last year's figures by dollar amounts, percents, or both; project income and expenses; and plan next year's budget. The program requires 128k. E Z Systems, Inc., PO Box 23190, Nashville, TN 37202-3190; (615) 269-6428; \$150 direct order. (For more product information, circle 221 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

able in personal or professional versions, is designed to cut tax preparation time using on-screen instructions, pop-up menus and color windows. The federal tax package for personal use includes 33 forms and schedules. The professional preparer's version adds client interview sheets and letter, file

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PRODUCT LISTINGS

manager, built-in time and billing, batch printing, laser print option, and 10 additional forms and schedules. Tax rates for 1986 are pre-programmed for tax planning. State tax packages are also available. The program requires 256k and DOS 2.1 or higher. ChipSoft, Inc., 5674 Honors, San Diego, CA 92122; (619) 453-8722; \$65 (personal version), \$195 (preparer's version) direct order. (For more product information, circle 222 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

INFOMATE assists metal fabrication plant managers, estimators, etc. in technical decision making and in performing calculations and computations. The computations available include metric conversions: cylinder development; right triangle solutions; bend allowance calculations; polar to rectangular conversions; forming and punching tonnage calculations; and material vield computations for sheet, coil, bar and tube stock. The material yield computations give project data and analysis for weights, scrap, quantities, and so on. Other information available on-screen includes a decimal chart; metal gage chart: density chart: welding abbreviations; surface roughness chart; assorted formulas; technical abbreviations; drill, tap and thread data; and fraction, number and letter size drill charts. The program requires 128k. Comp+Plus, PO Box 72054, Roselle, IL 60172: (312) 894-2444; \$120 direct order. (For more product information, circle 223 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

INVENTORY contains three programs that are designed to maintain an inventory of up to 4,000 products on a floppy disk system. Maintenance is provided for both the parts of the file and the vendor file from menudriven programs. Reports include invoice, purchase order, sales analysis, lost sales and suggested order. The program requires 128k. Midwest Data Systems, PO Box 3901, Springfield, MO 65808; (417) 887-9324; \$24.95 direct order. (For more product information, circle 224 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

LEAD MANAGER is a data base designed to assist marketing professionals with serving and tracking sales leads. According to its developer, the software is particularly suited to telemarketing. The system builds a data base of prospect information that can be updated when calls are made. From the list of prospects, the user can select prospect records according to the following criteria: follow-up dates, salesperson territory, type of product or service requested, ZIP code or other recurring fields. The program prints labels and envelopes, as well as reports. It works with several word processing programs to merge mailing records with letters and to keep sales correspondence current with calling information. The program requires 128k. A hard disk is also recommended. Security Pacific Computer Solutions, Inc., Suite 100, Los Angeles, CA 90071; (213) 229-3944; \$295 retail. (For more product information, circle 225 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

PC-DESKMATE, a desktop organizer, contains a calculator, calendar, notepad and phone dialer. The program also supports a printer controller and DOS commands. In addition, the software can be used to turn a computer and printer into a typewriter with standard features such as margin and tab settings and line/character modes. The program requires a minimum of 128k. PC-SIG, 1030 East Duvane Ave., Suite J, Sunnyvale, CA 94086; (408) 730-9291; \$10 direct order. (For more product information, circle 227 on one of the reader service cards that are locat-

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ed facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE PRIVATE LINE encryption program is designed to encrypt program or data files in accordance with the Data Encryption Standard (DES) published by the National Bureau of Standards, U.S. Department of Commerce. It uses either one or two 64-bit keys and requires 64k. Everett Enterprises, PO Box 193, Bath, NC 27808; (919) 923-5621; \$49.95 direct order. (For more product information, circle 228 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

TAKETWO automatically backs up hard disk files that have been added to or changed during the day. According to the software developer, this eliminates the need for standard backup. The program guides the user through a daily procedure and supplies information to control and access backed-up files. In addition, the software contains a configuration capability designed to simplify its use. A file-restore operation is performed through the software's display dialog. The program requires 170k. United Software Security, Inc., 6867 Elm St., McLean, VA 22101; (703) 556-0007; \$1,400 direct order. (For more product information, circle 235 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE TCS CLIENT TAX SERIES-1040 handles more than 30 IRS forms and schedules, with automatic flow of information among forms. says its developer. It accepts tax information for multiple clients in any order, and recalculates and displays tax liability for each client as entries are accumulated. Finished returns may be printed by one of several IRS-approved methods, including laser printing, overlays, pre-printed forms and computer-generated substitute forms. The program requires 256k. TCS Software, 6100 Hillcroft, Suite 600, Houston, TX 77081; (713) 771-6000; \$795 retail. (For more product information, circle 237 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

LEISURE

ALTER EGO is a role-playing game that offers the user a glimpse at his or her future, depending on the life paths he or she takes. The game supplies the user with life experiences from birth through maturity. Based on the user's responses to questions, he or she can learn the outcomes of different life paths without having to pay the real-life consequences of certain decisions. The pro-

gram requires 128k. Activision, Inc., 2350 Bayshore Frontage Road, Mountain View, CA 94043; (415) 960-0410; \$49.95 retail. (For more product information, circle 239 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

THE AMERICAN CHALLENGE: A SAILING SIMU-LATION can be played by one or two players. Two players can race their simulated vessels from two computers at the same location using direct-connect cables or from two different locations using modems. A match race competition pits the top eight sailors against each other to win a trip to Perth. Australia, where the America's Cup race will be held in 1987. The program requires 128k. Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062; (312) 480-7667; \$39.95 retail. (For more product information, circle 240 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

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Woodbridge, VA 22191; (800) 762-5645; \$149.95 retail. (For more product information, circle 241 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

BIO*CELL presents the user with an introduction to the biology of cells. Major plant and animal cell structures are illustrated and the function of each organelle is explained. A survey of the various types of cells that make up plants and animals is provided. The material, says the program's developer, is suitable for anyone in grades seven and up. The program requires 64k. Zephyr Services, 306 S. Homewood Ave., Pittsburgh, PA 15208; (412) 247-5915; \$29.95 (plus \$2 shipping) direct order. (For more product information, circle 242 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

CODE QUEST pits the player against the computer in a duel of logic. The player and computer each choose a hidden code that the other tries to guess by entering a series of possible choices for the hidden code. Using logical reasoning and practice, the player may learn to deduce the computer's code before it finds his. The program requires 160k. Frontier Software, Inc., 1110 South 124th St., West Allis, WI 53214; (414) 257-1175; \$34.95 (plus \$3 postage and handling) direct order. (For more product information. circle 243 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

C*O*I*N*S provides coin collectors with current values for 1,600 of the most popular United States coins. The package includes the "Official A.N.A. Grading Standards for the United States," which brings collectors up to date on grading distinctions. The program requires 64k. Compu-Quote, 6914 Berquist Ave., Canoga Park, CA 91307; (818) 348-3662; \$95 (plus \$1.75 shipping) direct order. (For more product information, circle 244 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

CRIBBAGE MASTER II makes discard recommendations and provides a breakdown of crib and hand scoring, plus a point-by-point analysis of in-play pegging. Cribbage Master II plays a regulation game, with His Nobs, His Heels and Go, and has card graphics showing the player's cards moving to and from the table. Peg scores are automatically kept to game level and a running count of games won and lost is maintained during the playing session. It requires 64k. Manhattan Software, PO Box 148, Peterborough, NH 03458; (800) 432-5656, (603) 924-9998; \$35 direct order. (For more product information, circle 245 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

DICK FRANCIS' HIGH STAKES is a simulation game that puts you in the role of a wealthy English horse owner. You've never paid much attention to your trainer or your horses, but now you must foil a sinister plot to cheat you. The program requires a minimum of 128k. Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062; (312) 480-7667; \$39.95 retail. (For more product information, circle 246 on one of the reader service cards that are located facing the Product Index within the product review section or opposite the Advertiser's Index.)

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(For More Information Circle 129)

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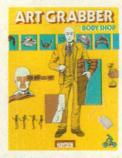


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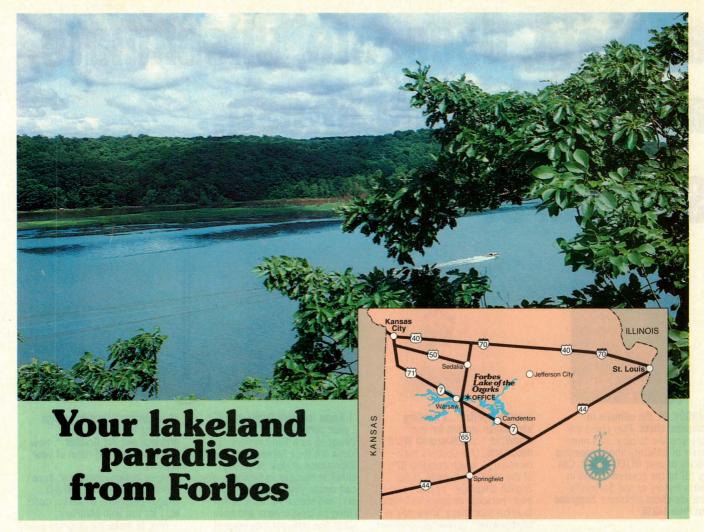
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(For More Information Circle 68)





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Converting Files To MS-DOS

Q: I own a Xerox 820-II personal computer that uses CP/M version 2.2. Recently I purchased a new IBM PC XT compatible that uses MS-DOS. Is there some way I can get the two computers to communicate with each other?

A: There are several approaches to exchanging files between CP/M- and MS-DOS-based computers. If your two computers are not physically next to each other, they can be linked using communications programs, the telephone lines and modems. But if the two computers are within several feet of each other, they can be connected with a null modem cable through the serial ports of each computer. Then, still using communications software, you can transfer files as if you were using a telephone line and a modem.

Another approach to this problem is to use a data conversion utility program. There are a number of these products on the market. One such program, Uniform-PC (\$69.95), from Micro Solutions in DeKalb, Ill., allows you to work from either the CP/M or MS-DOS machine. When Uniform-PC is booted you get a menu with some 70 or 80 personal computers listed. You then designate one of your drives to emulate a computer on the menu. (Xerox 820-II is one of the choices.) This done, you can either initialize a disk in that format or read and write to disks already formatted for that computer. If you do the latter you can use your CP/M formatted disks on an MS-DOS machine without altering them. Converting the files is another option. Once a file is read with Uniform-PC's help you use the copy command in MS-DOS to transfer the file to another floppy disk or a hard disk formatted for MS-DOS.

Other programs that perform the same functions as Uniform-PC, but have added functions, come from Intersecting Concepts in Moorpark, California. One of the company's products,

If you have questions dealing with hardware, software or applications, PERSONAL COMPUTING will answer them in this monthly column. Please send your "need-to-knows" to Answers, PERSONAL COMPUTING, 10 Mulholland Drive, Hasbrouck Heights, NJ 07604.

SHORTCUTS

Using Ctrl-C As An Emergency Brake

ow often have you wanted to boot up a new program but not had a DOS system disk at your side? You probably reached for the next best thing: an application disk with an AUTOEXEC batch file. Then you had to wait for the entire program to load just to exit and get an A prompt, so you could load the program you really wanted. But there is a way to stop the AUTOEXEC routine from finishing its task as soon as you enter the DOS date and time. Typing Ctrl-C will cause DOS to ask, "Terminate Batch Job: Y/N?" Entering Y will give you the A prompt.

Ctrl-C is also a timesaver if you want to glance at the top of a long file in DOS and bail out quickly. Normally, entering TYPE (FILENAME) causes DOS to scroll through the file. Suppose you only need a second or two to glean its contents. Repeatedly pressing Ctrl-S only serves to pause and resume the scrolling. You'll have to wait until the entire file scrolls by until you're back at an A or C prompt. Using Ctrl-C, however, will immediately return you to a prompt.

Tell us your shortcuts. Do you know a faster, more efficient way of doing something? Let's hear from you! We'll publish the best shortcuts we receive. Write: "Shortcuts," PERSONAL COMPUTING, 10 Mulholland Drive, Hasbrouck Heights, NJ 07604. Include your address and phone.

Media Master (\$39.95), takes the image of one data file format and converts it into another format. If you have CP/M data files, the program will convert them into MS-DOS format on a new disk. Unlike Uniform-PC, the software will not let you simply read and write to a formatted disk with a different format system.

Media Master Plus (\$59.95), also from Intersecting Concepts, enables you to convert CP/M programs to MS-DOS format and then run those programs in a CP/M environment within an MS-DOS machine. The part of the program that emulates the CP/M environment is called ZP/EM. This means that you can use CP/M software unavailable in MS-DOS versions from the manufacturer.

Another program from the same manufacturer, Acceler8/16 (\$99.95), includes the functions of Media Master Plus, but lets you run your CP/M software in MS-DOS machines at three times the normal speed. It does this by employing the NEC V20 chip, a dual processor chip with both the 8088 and

8080 processors in it, and software for using the chip with the Media Master Plus software.

There are still other programs that perform data conversion tasks: Xeno-Copy (\$99.50), from Vertex Systems, Inc. in Los Angeles, which does very much the same thing as Media Master, is menu driven and can work with 235 different formats; Crossdata (\$99), from Award Software in Los Gatos, Calif.; and Convert (\$69), from Selfware in Fairfax, Virginia.

Q: I am looking for modem-like hardware that has only dial-out capabilities and can be used in conjunction with the "dial" program in Borland's SideKick program version 1.5. My company's policy precludes the attachment of dial-up devices to a personal computer because we are connected to mainframes.

A: Your problem is not unusual. Many professionals who want to tap the power of a dialing program cannot do so because their telephone systems do not allow data transmission from a personal computer.

ANSWERS

There are add-in cards that will allow you to use a dialing program so you won't have to do the dialing yourself. The one dial-only piece of hardware for use with SideKick is called My Dialer from Third Floor Systems in San Jose, California. This add-in card for the IBM PC or compatibles costs \$99.99. It dials like a modem card, but can't be used for data transmission.

There are other dialer programs not designed to work with SideKick. One such program, called Personal Telephone Manager, comes from IBM. It will maintain an unlimited number of telephone directories for you, enable you to access telephone numbers in other applications or on a host computer, dial out for you and even remind you to make a call. The software costs \$70; the add-in board costs \$325.

Q: Do computer manufacturers offer inexpensive books or brochures that contain tips on buying a computer? I've read several books on the subject, and would like to get a manufacturer's opinion.

A: At least one manufacturer does. Texas Instruments offers a free package of information, called Info-Pro, that gives you an overview of what you should look for when purchasing a small business or professional computer.

The literature provides answers to frequently asked questions on both hardware and software. It also includes a brochure on the 30 most popular software titles for professional computers, how to buy a computer, hints about what to look for in the company behind the computer you buy, how to lease a computer and more.

For a copy of this material, or to obtain additional information on its contents, write to Texas Instruments, Data Systems Group, PO Box 809063, Dallas, TX 75380-9063.

Q: My wife always saves store coupons and sends for manufacturer's rebates. I am wondering if someone out there has developed a software package for cataloging and tracking these things? I have an IBM PC with 512k, an Amdek 600 monitor and an Epson FX-100 printer. I don't want to use a business data base program.

A: It's true that using a business data base product for such an application would be overkill. But since there are no programs we know of designed specifically for organizing coupons, why not try a simple filer program? They are generally easy to use and enable you to design your own forms for entering information about each coupon and then retrieving that data by food category, grocery stores that accept coupons, or any other criteria you choose. The following is a partial list of filer programs that may help you: PFS:File from Software Publishing of Mountain View, Calif.; Q & A, from Symantec Corp. in Cupertino, Calif.; PC-File III, from ButtonWare, Inc. in Bellevue, Wash.; and PC-File/R, also from ButtonWare.

Q: Does anyone sell a Dvorak keyboard for the IBM PC and compatibles? I realize that it's possible to use a program that redefines the keyboard, but I want an alternative keyboard to replace the inefficient QWERTY keyboard I have.

A: Only one company sells a Dvorak keyboard for the IBM Personal Computer and its compatibles: Key Tronic Corp. of Spokane, Washington. Its keyboard, the 5151D, costs \$255 and plugs directly into the keyboard port of the computer. This is the same company, by the way, that sells keyboards to many manufacturers of PC compatibles.

Q: I've been told that compact disks offer tremendous data storage capacity and can be interfaced with personal computers. I also understand that a compact disk stores as much information as a 25-volume encyclopedia with 90 percent of the disk space free. Is an encyclopedia available on compact disk, and why haven't I seen more articles on compact disk data storage in general?

A: Compact disks (CDs) offer impressive data storage capability—about 600 megabytes, which is the equivalent of 1,500 floppy disks. And yes, *Grolier's Encyclopedia* is available on CD. At this writing, Grolier is offering the CD, the disk drive and the software as a package for \$1,495 (Grolier Electronic Publishing, New York, N. Y.).

Unfortunately, the encyclopedia is the only commercial application currently available on a CD, so there have not been many articles written on the technology. Three related factors are also responsible: the lack of a software standard, making manufacturers hesitant to commit themselves to a data format that may change; a high initial investment to master the disks, buy the raw materials and train personnel; and the lack of an installed base of CD disk drives

The introduction of a software standard, expected in the next year and a half, should break the software logjam.

Most initial consumer applications will probably focus on professional users who need the storage capacity for data base applications. (See the related story in this month's UPDATE column.)

Q: When trying to run the installation for WordStar 3.3 on my 512k IBM Personal Computer, I get a message stating there is not enough memory available. What's the problem?

A: According to the technical support department at MicroPro, WordStar's manufacturer, this problem sometimes arises in versions of the program that were released when 256k of RAM was considered the upper limit available on an IBM PC. Fortunately, there are two solutions, depending on whether you have two floppy disk drives or a floppy and a hard disk.

With two floppy drives, put a DOS disk containing the Debug program in the A drive and put your WordStar disk in the B drive. At the A prompt, type DEBUG B-WINSTALL.COM and hit the Return key. You'll see a dash appear on the screen. Type E2D4 and hit the Return key again. A brief sentence that includes the phrase 2D4 will appear on-screen; type 72 and again press Return. Another dash will appear on-screen, at which time you should type w and hit Return. A final dash will appear; type Q and Return. That procedure should eliminate the problem.

If you have a hard disk, make sure you are working in the same directory in which the Debug program and WordStar are located. At the C prompt, type DEBUG WINSTALL.COM and press Return. The rest of the procedure is the same as for a two floppy drive system.

More information can be obtained from MicroPro International, located at 33 San Pablo Ave., San Rafael, CA 94903. The phone number for the technical support department is (415) 499-8320.

Q: I am running dBase II on my Franklin 1200's CP/M card. The data base that I am currently using takes up one drive and the program takes up the other. I need more disk space and would prefer a hard disk. What do you suggest short of changing systems?

A: There are several good hard disks for Apple II series computers and compatibles like the Franklin. In order to use a hard disk with a CP/M computer, all you do is create a division of the disk for that operating system.

One hard disk, called Sider, is pro-

duced by First Class Peripherals in Carson City, Nevada. At \$595 (\$695 with the choice of a data base program or word processor), Sider offers 10Mb of mass storage and supports CP/M, Pro-DOS and Apple DOS 3.3. Sider takes its name from its small footprint—it sits alongside the Apple (or Franklin) computer. Apple Computer itself (located in Cupertino, Calif.) offers the Profile 5 Megabyte and Profile 10 Megabyte hard disks for \$995 and \$1,299, respectively. Quark, of Denver, Colo., sells the Quark 10 and 20 hard disks for \$1,295 and \$1,795, respectively. These drives, however, only work with CP/M cards from Advanced Logic Systems of Sunnyvale, California.

Q: Can you help me find a software package designed to keep track of small business accounts?

A: There are many programs for your application available, with a wide range of features and prices. Here are two options you may want to consider.

The Account Manager program from Information Systems is designed to keep track of small business accounts and maintain records for 10 individual accounts. It retails for \$34. For more information about the program, you can contact Information Systems, RD#2, Andrews Lane, Glenmore, PA 19343; (215) 942-3156.

Another possibility is Plains & Simple from Great Plains Software. This program retails for \$695 and is designed to automate general ledger, accounts receivable and accounts payable. For additional information, contact Great Plains Software, 1701 SW 38th St., Fargo, ND 58103; (701) 281-0550. (For more details on small business accounting, see the related story in this issue.)

Q: Sometimes my Apple III runs out of memory while I am using a software application. How can I avoid this?

A: Regularly check the amount of information you are entering into the computer and periodically save it to disk. If you still find yourself running out of memory, you might want to consider increasing your computer's RAM. If your Apple has 256k, you can expand it to 512k with a board from On Three in Ventura, California. For about \$449 (plus \$10 shipping), you get 450k of extra memory.

Software programs that run under the Apple III's operating system work well with this increase in storage capacity. And, because your computer's current

256k board runs parallel to the motherboard, when you swap it with the 512k board you won't take up one of the computer's expansion slots. Write to On Three, 512 Memory Upgrade Dept., PO Box 3825, Ventura, CA 93006 for further information, or call the company at (805) 644-3514. According to On Three, if you send in your old 256k board, you'll receive a \$50 rebate.

Any other information you need regarding your Apple III can be obtained by contacting Sun Data Corp. in Logan, Utah. According to Apple Computer, Inc., Sun Data is now handling all hardware, software and telephone support for the Apple III. Sun Data is not aware of any other memory expansion cards for the Apple III, but for other information you can contact the company at PO Box 4059, Logan, UT 84321, or call (800) 821-3221 (to place an order) or (801) 752-7631 (for technical support).

Q: Would you please tell me where I can obtain software for an IBM Personal Computer that maintains a checkbook journal?

A: There are many programs on the market that will keep a checkbook journal for you. Some of these programs will do much more, as well, such as portfolio tracking, tax calculations, personal worth statements and an analysis of your financial goals. What's nice about the more full-featured programs is that you can use them for checkbook functions and slowly work up to using the other features.

A sampling of personal finance programs—some more feature-rich than others, includes: the Checkbook Analyzer from Windcrest Software, Inc. (Waynesboro, Pa.), Checkbase from IMSI (San Rafael, Calif.), Chequemate Plus from Masterworks Software, Inc. (Lomita, Calif.), dBase II Writes Checks from Better Business Solutions (Clearwater, Fla.), Dollars & Sense from Monogram (Inglewood, Calif.), Managing Your Money from MECA (Westport, Conn.), and Quicken from Intuit, Inc. (Palo Alto, Calif.).

For a more complete listing of personal finance programs, see the Buyers Guide article "Money Management Software" in the October issue of *Personal Computing*.

Q: What are the Apple keys on the Apple IIe computer used for?

A: On the Apple IIe, these keys are used with the Reset key to trigger special diagnostic tests and to perform special

system resets. In some programs, they are used with other keys to initiate functions. These keys are also tied directly to the game ports on the back of the computer. In some older Apple II games, the Apple keys enable you to use game paddles or joysticks.

The open Apple key can be used with the Reset key to force a cold start of a program in memory even though the computer is on. This is designed to save wear and tear on the power switch and is a convenient way to restart the program. If the open Apple key is held down alone, it forces a restart of the computer and wipes out anything in memory.

The closed Apple key, pressed along with the Reset and Control keys, runs a diagnostic test of the computer's circuits. The diagnostic test checks RAM memory by writing to, and reading from, each location.

The Apple keys are also used by program developers. In the AppleWorks program (Apple Computer, Inc., Cupertino, Calif.), the open Apple and a letter key are used to perform a particular function. For example, the open Apple key with the H key gets you to help screens. AppleWorks uses these as the command set for running the program.

Q: On an Apple IIe, is there a way I can save an Applesoft program to disk using a password? If so, how?

A: According to a spokesperson at Apple Computer, Inc. (Cupertino, Calif.), there is no "automatic" way to use a password on an Applesoft program—you have to create one in a roundabout manner. Unfortunately, this isn't foolproof since a sophisticated user who has a knowledge of ProDOS can get around your password.

There are two ways in which a password can be created for use with Applesoft. The first is to write a miniprogram within your Applesoft program that has an appropriate command to abide by your password. To do this you have to be familiar with programming the Apple IIe. Then, when an unsuspecting user tries to save the program, a message will state FILES LOCKED CAN'T SAVE.

The second method is to "pack the disk" or fill it up with unnecessary files. That way, when a user trics to save the program, the disk will read DISK FULL. You can create a password which would automatically delete the unnecessary information to make room for the program on your disk.

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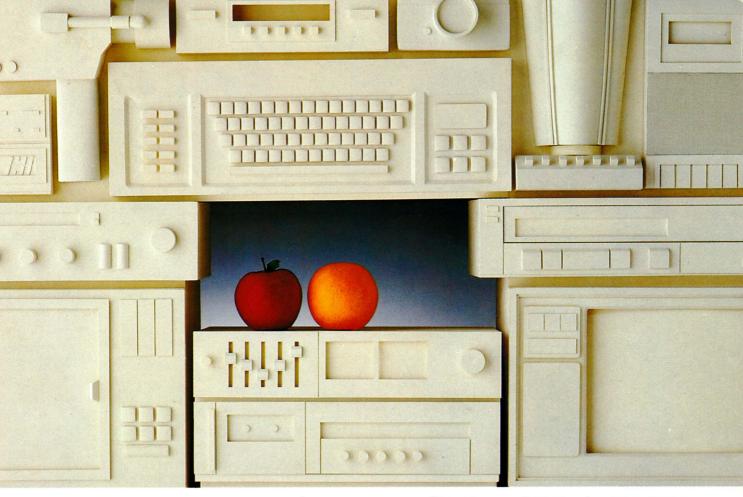
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